THE IRON AGE

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New Annealing Equipment for Strip Steel

Electric Mule on Rack for Charging—Ample Combustion Space in Furnaces—Arrangement for Cooling Boxes and Quick Charging of Furnaces

WHEN the Worcester Pressed Steel Co., Worcester, Mass., decided to revamp its annealing department it was working under somewhat heavy handicaps, through having five annealing furnaces in a narrow shop and with insufficient room for properly handling the product. Too much time was being used in charging and discharging the furnaces, with consequent loss of their internal heat and with severe exposure of the men and the crane to radiated heat from the boxes being withdrawn and set aside to cool. Head room was deficient, so that the crane had to take several "bites" on the hauling chain before getting a pot into or out of the furnace.

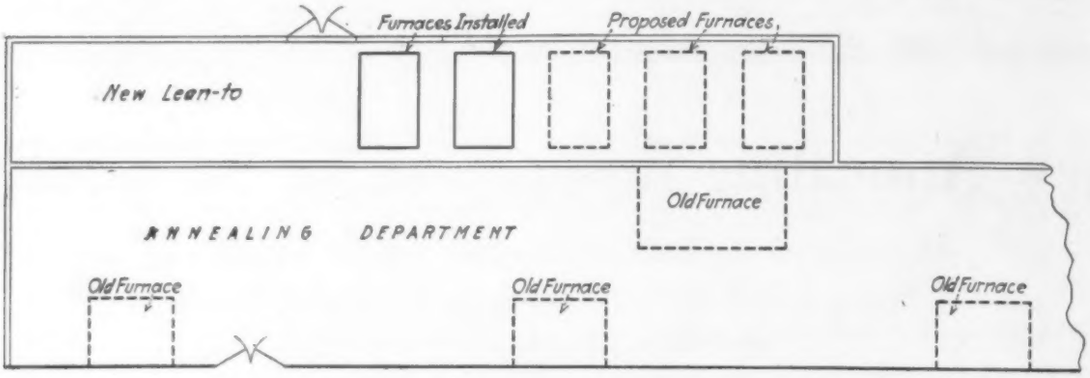
To remedy this condition, a furnace lean-to was built alongside the old annealing room and two new furnaces placed in that lean-to. At the same time three of the old furnaces were removed, thus clearing a good part of the floor, and special charging arrange-

AT Right, the Electric "Distant-Control" Mule Has Pulled an Annealing Pot from the Furnace, Shoved Another One In by Pushing the Two Pots Forward and Then, Dropping Its Hooks Over the Lugs on the Carriage of the Hot Pot, Has Hauled it Back and Permitted the Door to Close Over the Fresh Batch

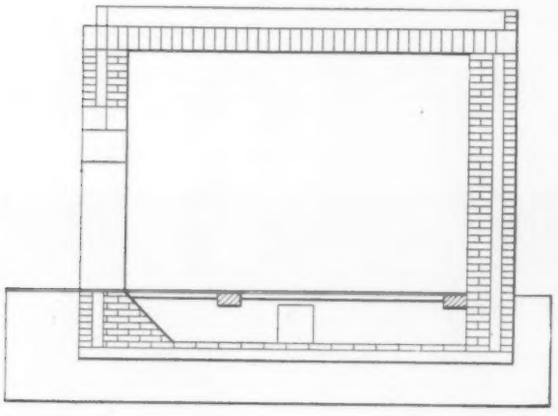
AT Left, the Two Furnaces of the New Group Show Unusual Height Above the Door Opening, for the Purpose of Providing Adequate Space for Complete Combustion of the Fuel Before Discharging Its Gases Through the Floor Flues and Thence to the Stack. Each furnace has two burners

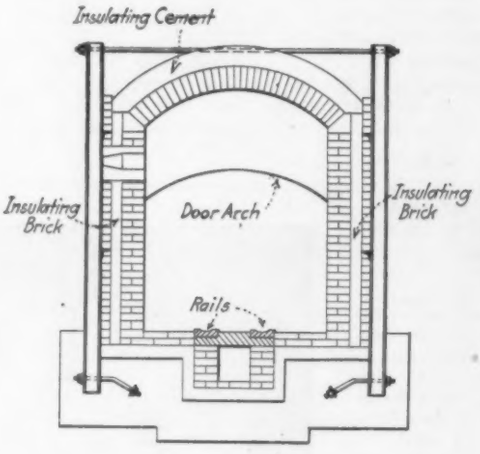
ments put in, making a much more convenient method of handling, with less loss of furnace heat and much less exposure of men and crane to the heat from the withdrawn pots. The new outfit is from designs of H. A. Fisher, plant engineer, the charging mule being the subject of a patent application.

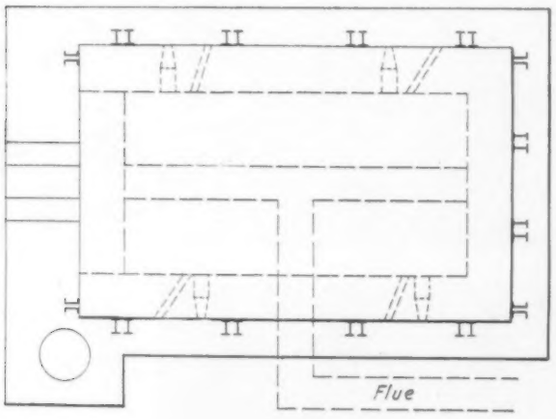
The Fisher annealing furnace differs from the older furnaces, mainly in the arrangement of burners, flue and arch. In particular, the space above the pot was made large enough to provide for proper combustion of the oil without sending too much of the heat up the stack. At the same time, the burners were so arranged



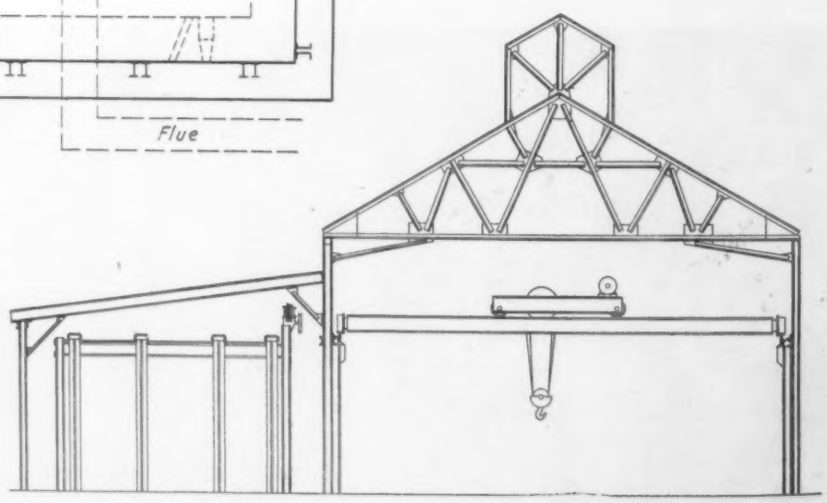
General Layout of the Annealing Department, Showing the Relative Extent of the New Furnace Lean-to and the Locations of Old and New Furnaces. This indicates the extent to which the working space has been improved by removal of the old furnaces







Three Sections of the New Furnace —a Longitudinal Cut Along the Axis, a Cross Section Through one of the Burners and Showing the Center Flue Beneath the Rails and a Horizontal Section (at Left)



At Right Is a Section Through the Annealing Department and the New Furnace Lean-to. The crane places both charging mule and annealing saucers and pots on the tracks where needed

that the oil under atomization would not impinge upon the pot and thus, through disintegration, produce smoke.

In operation, oil (26 to 30 deg.) is pumped from tanks which hold enough for about one month's supply at full load on the plant. It is delivered to the burners at a pressure of about 35 lb. per sq. in., by a motor-driven pump. Air is used for atomization, being delivered from a motor-driven blower at a pressure of about 14 oz. The furnace has two burners on one side and as the roof has a considerable spring of arch—differing from the flatter arch construction common in such furnaces—radiation to the pot is directed in such a way as to obtain splendid results. Sil-o-cel insulation is placed between the interior fire brick (two courses) and the outside wall brick of the furnace.

Charging Mule with Remote Control

Weighing about 5000 lb., the Fisher charging mule is driven by a 7½-hp. motor mounted on the rear, but controlled from a post on the wall and trailing its power cable after it. This permits the operator to keep well away from the hot pot being hauled out of the furnace. The mule operates on a floor rack at a speed of about 25 ft. per min., the rack being used to take up the thrust in either pushing or pulling a pot.

Cast steel rails are used inside the furnace and cast iron rails outside. The racks are cast steel and the speed reduction between the mule motor, which runs at 500 to 1000 r.p.m., and the rack pinion is about 150 to 1. Pretty nearly the whole interior of the mule is taken up with the gearing necessitated by the heavy reduction ratio.

In the operation of charging a fresh pot into a furnace which contains a pot ready for withdrawing, the mule first hauls the pot of annealed material from the furnace by means of the hooks shown in the photograph, and dropped over the lugs on the saucer. The pot rolls out on cast steel balls running in a grooved track and is withdrawn far enough so that the fresh pot may be placed, by the crane, upon the track between the withdrawn pot and the furnace. The mule thereupon shoves both pots forward until the fresh pot is entirely within the furnace. It then hauls the hot pot back a short distance, permitting the lowering of the furnace door. The hot pot is left in that position for perhaps 15 hr., until it becomes cool enough so that it may be handled without distress. As only one mule is provided for the furnaces, it is necessary to transfer the mule from track to track, as needed, by means of the overhead crane.

The pots are designed for a maximum load of about 18,000 lb. of strip steel. As the pot and saucer together weigh also about 18,000 lb., this makes a maximum load of some 36,000 lb. Tests on a load of about 33,000 lb. gross showed that the (weighed) oil consumption for complete annealing amounted to 650 lb., over the annealing period of about 15 hr. This was at an annealing temperature of from 1400 to 1450 deg Fahr., which is common for low-carbon steel, and works out at about 87 lb. of oil for each net ton of steel annealed.

Aluminum castings, bars, plates, sheets, ware, etc., produced during 1923, are reported by the Census Bureau at $106,930,367, an increase of 133.4 per cent over the $45,822,161 reported for 1921. The number of establishments increased from 87 to 119, the average number of wage earners from 9584 to 16,288, the amount of wages from $10,835,597 to $19,843,546. The horsepower used in 1923 was 58,272, while 174,261 net tons of coal was consumed.

Aircraft produced in 33 establishments in 1923 amounted to $12,945,263, compared with $6,641,988 from 21 establishments in 1921, according to figures of the Census Bureau. Wage earners increased from 1395 to 2901; their wages from $2,202,307 to $4,521,949, and the value added by manufacture from $4,234,593 to $9,115,689. Horsepower used in 1923 was 5443, while the coal consumed was 10,042 net tons.

WELD BETTER THAN A NEW PART

Punch Press, Welded Once, Broke Again at a Different Point

BY J. F. IRBY*

EVERY shop working with metals may not have in its equipment a punch press of the same dimensions as the one illustrated. But few shop owners are not faced, at one time or another, with the specter of a shutdown because of damaged machinery. Thus the main point in the following incident may be typical of the wide variety of repair and reclamation work done by welding.

Broken equipment carefully repaired with a reinforced oxy-acetylene weld is stronger at the repaired section than it was originally. Some skeptics might say: "Undoubtedly, in laboratory tests, but does the same hold good in practice?" To answer the question most satisfactorily is to prove it.

As a Result of One Accident the Frame Was Welded Clear Across the Middle, 20 In. x 19 In. in Outside Section (Above)

After a Second Break, Which Did Not Disturb the First Weld, a Second Weld Was Made in the Crank Bearing and the Machine Again Passed into Service

Fig. 1 shows a punch press frame, a gray iron casting weighing about two tons. A piece of metal too thick or tough broke the casting square off at the level of the table. The frame was cracked through a hollow rectangular section 19 in. wide by 20 in. deep, 6 in. thick at front, 1½ in. at the back and 2 in. thick at the sides.

After the edges were carefully veed and the frame accurately alined, it was preheated by gas burners and a good welding job done by competent oxy-acetylene operators. The casting was carefully covered to protect it from drafts during welding, and this covering was left in place until the casting had cooled.

After proper annealing the punch press frame was put back in service and stood up under the work for a year. Then someone again fed it too big a bite and it went. Of course, the frame was sent to the same shop which had welded it after the first accident. Again it was repaired and is shown in the second illustration, ready for another term of service.

The point in the story is not that one good job deserves another, nor that the competent welder is an ever-ready help in time of trouble, but that the second break did not run through the old weld. This was left unharmed. Nor was the new break in the region preheated for the old weld. It was in the crank bearing, 4 ft. away. This, then, demonstrates the original proposition, that a second break in a properly made weld need not be feared.

*Allmetals Welding & Mfg. Co., Baltimore.

Budget Methods of Metal Product Company

Sales Estimated in November for Following Year and Manufacturing Program Planned—Selling Expense, Advertising and Administration Budgeted

BUDGET procedure based on the methods of the Cleveland Metal Products Co., Cleveland, manufacturer of oil stoves, oil heaters and porcelain enameled steel products, is outlined in a report on "Budgeting for Metal Working Establishments," recently prepared by the policyholders' service bureau of the Metropolitan Life Insurance Co., New York.

The procedure is offered as applicable to enterprises manufacturing specific metal products rather than to those which are engaged on special order work. It is based on the practices developed by D. C. Lowles, auditor, and C. E. Anderson, manager department of statistics and commercial research, of the Cleveland company. The thorough faith of the chief officers of the Cleveland company in the budget is emphasized as having made possible developments not ordinarily found in metal working establishments. The size of the company's operations may be noted from the volume of sales, which in 1922 were more than $14,000,000. Two plants having a combined area of 816,372 sq. ft. are operated.

The outstanding feature of the budget system is the consideration given to forecasting reasonable sales expectations. The unit accepted by the company for the accumulation of data and for purposes of forecasting, is the "county," which unit was chosen because the company's product obtains its best distribution in rural sections. A detailed analysis has been made for each "county" of all conditions which seem to affect the sale of its product, and the resulting data is entered on a "county card," which is shown as Form A.

On these cards the shipments to dealers are tabulated monthly by counties, a report being sent to each district manager every three months showing the county totals by items for his district. The manager has a duplicate set of cards and is advised of any additional information or changes. The card provides for the leading competition the company has to meet. The information therefor was obtained mainly from a "poll" of oil stove users, conducted by magazines and journals in which the company advertises. To supplement this condition of competition, the company's own salesmen check up from time to time by questioning the dealers they call upon. It is admitted that this data is not complete, yet it does give an exceptionally good "cross-section" view of county conditions and is proving in practice an accurate basis from which to work. The last Government and other reports of crop, financial, and trade conditions are carefully analyzed and used to modify the expectation of business to be done as well as to reveal the sections where special advertising or intensive work is required.

The "county card," on the reverse side, shows what business has been done for several years back, and there is now being accumulated by means of the punched card system monthly shipments. This knowledge of general conditions and best sales is considered essential for a reasonable estimate of prospective business.

As soon after the first of November as the October statistics are completed, the statistical and research department make up detailed statements covering the ten months' business, January to October, plus an estimate from November to December. These statements are then forwarded to each district manager for a preliminary estimate of the next year's business. The estimates after being carefully reviewed, are then translated into a "manufacturing budget" so that the cost department may develop a manufacturing program and figure standard costs for inventory purposes. As it is a six weeks' job to make entirely new standards for the new line of product, the necessity of beginning this work by Nov. 15 is clearly seen.

After the preliminary sales estimates have been reviewed and the manufacturing program decided upon, the budget officer visits the district offices and works out with each manager a revised sales budget, adjusting the ratios of the various products and increasing or decreasing items which appear to be out of line. Upon the budget officer's return to Cleveland the figures are again carefully reviewed and then approved by the general sales manager and the directors.

Sales Expense Budget Established

Once the sales budget has been determined, a selling expense budget, or "sales operating expense budget" is established. This budget is made up by districts under the following five groups of expense: office and general, salesmen, warehouse, transportation, and sales

Form C—Production Schedule—No.

	Estimated Working Days	Estimated Production per Day, Gross	Estimated Production Per Month Gross	Estimated Production Per Month Single	Actual Production per Day	Actual Production per Month	Actual Shipments to Dirs. and Dist. Calendar Year, 1923
	..	..	...	....	....	....	....
	..	..	...	....	....	....	....
Inv'ty. at Cleveland 12/31/23	..	..	...	8,568	....	....	....
Produce in January	24	0	0	0	....	....	8,612
Total made to Jan. 31, incl.	..	..	...	8,568	....	....	8,612
Produce in February	23	8	184	26,496	....	....	16,522
Total made to Feb. 29	..	..	...	35,064	....	....	25,134
Produce in March	23½	5	117½	16,920	....	....	17,924
Total made to March 31	..	..	...	51,984	....	....	43,058
Produce in April	24	5	120	17,280	....	....	12,871
Total made to April 30	..	..	...	69,264	....	....	55,929
Produce in May	23½	3	70½	10,152	....	....	14,445
Total made to May 31	..	..	...	79,416	....	....	70,374
Produce in June	23	0	0	0	....	....	11,307
Total made to June 30	..	..	...	79,416	....	....	81,681
Produce in July	24	0	0	0	....	....	5,763
Total made to July 31	..	..	...	79,416	....	....	87,444
Produce in August	23½	1	23½	3,384	....	....	2,559
Total made to Aug. 31	..	..	...	82,800	....	....	90,003
Produce in September	23	2	46	6,624	....	....	4,080
Total made to Sept. 30	..	..	...	89,424	....	....	94,083
Produce in October	25	2	50	7,200	....	....	4,369
Total made to Oct. 31	..	..	...	96,624	....	....	98,462
Produce in November	21½	0	0	0	....	....	4,609
Total made to Nov. 30	..	..	...	96,624	....	....	103,061
Produce in December	20	3	60	8,640	....	....	1,911
Total made to Dec. 31	..	..	...	105,264	....	....	104,972

Form C, at the Right, Is Used in Working Out the Production Schedule. From production programs, final revised factory departmental budgets are made up.

Form A—County Card, Front Side

1	2	3	4	5	6	Rating

County ... State ... Territory No. ...

Population: ... Principal City ... Square Miles ...
- 1920 ... Number of Families ... Buying Power Per Capita ...
- 1910 ... Per Cent Urban ... Per Cent of Saturation ...
- Per Cent Inc. or Dec. .. Number of Farms ...

Number of Illiterates ... Number of Dealers ... Number of Dealers Sold ...

Per Cent Illiterates to Population ... Per Cent Dealers to Families ... Life of Stove "Year" N.P. & Pur. Superflex Heaters

Fuel Condition ... Gas Rate ... No. of Consumers ... City ...

...

Other Fuel ...

...

Competition ... Per Cent Competitive ... Competition ... Kind Manufactured ...

Source of Income ... Manufactured Products ... Farm Products ...

...

Remarks ...

Form A—Reverse Side

Date	Stoves: N. P.	Stoves: Sup'x.	Stoves: Pur.	Stoves: Total	Stoves: Per Cent Farm's.	Stoves: Total Bur.	Cabinets: N. P.	Cabinets: Sup'x.	Cabinets: Total	Cabinets: Per Cent Stvs.	Ovens: Qnty.	Ovens: Per Cent Stws.	Ovens: W. H.	Heaters: Qnty.	Heaters: Per Cent Fam's.	Wicks: Qnty.	Wicks: No. to Bur.
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
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freight. The total expenses for the year for sales operating are then allocated to the individual months. In determining the sales operating expense budget, the addition or elimination of warehouse points is decided upon as well as the required office force and salesmen.

There is thereupon made up for each district a "sales and operating budget," Form B shown herewith, which gives a final percentage of total estimated operating cost to planned sales. This budget shows the actual results for each district in comparison with planned figures or established standards. The marginal allowance shown in the report is the cost to sell allowed the district by the budget and is the total estimated operating cost computed as a percentage of anticipated sales.

The next ste[illegible]s the preparation of budgets for general administrat[illegible]e departments and for advertising. The advertising budget is usually worked out by setting up a definite percentage of estimated sales, say 4 per cent, [illegible] an appropriation. This appropriation is then referred to the advertising and sales committee for development into a complete program of publicity.

Upon the completion of the budgets for sales, selling [illegible]xpense, advertising and administration, the standard stocks or inventories at each warehouse point are then determined for each month of the year. Such standard require[illegible]ents are based on 30, 45, 60, or 90 days shipments, according to the distance from the factory, the speed with which the stock can be replenished, and the available storage space. Each sales district is split up by kinds of product and different styles, and the amount expected to be shipped each month is then entered on the district warehouse report for each stock carrying point.

From such standard stock requirements it becomes an easy step to work back to a complete revision of the manufacturing program, which up to this point is considered only as preliminary. To the manufacturing department is left the task of coordinating the sales requirements with efficient manufacturing, avoiding on the one hand the peaks and valleys due to making the factory force carry the load and thus giving an excessive labor turnover; while on the other hand avoiding an unbalanced and unduly large inventory with its burdensome carrying charge on the investment.

How the Production Schedule is Worked Out

The manner in which the production schedule is worked out may be illustrated by one of the company's minor items shown on Form C herewith. The form provides for the estimated working days in each month; the estimated production per day in terms of gross; the estimated production for the month; and the actual production per day and for the month; the actual shipments to dealers and district offices last year and for the coming year; the planned shipments for the current year; the stock on hand after allowing for planned shipments;

441 *Wicks—Calendar Year* 1924

Actual Shipments to Dirs. and Dist. Calendar Year, 1924	Budget Shipments to Dirs. and Dist. Calendar Year, 1924	Total Stock After Deduction Budget Shipments	Branch Stock per Sales Department	Difference Equals Cleveland Stock	Cleveland's Stock is Per Cent of Next Month's Budget Sales Per Cent	Actual Cleveland Stock	Actual Branch Stock	Actual Total Stock
....	....	Cl. 8,568	....	.....	...	.....	.....	.....
....	....	Br. 21,157	....	.....	...	.....	.....	.....
....	....	29,725	....	.....	...	8,568	21,157	29,725
....	9,224	9,224	....	.....	...	1/15	.....	.....
....	9,224	20,501	8,044	12,467	69	1/31	.....	.....
....	18,000	8,496	....	.....	...	2/15	.....	.....
....	27,224	28,997	9,520	19,477	101	2/29	.....	.....
....	19,203	2,283	....	.....	...	3/15	.....	.....
....	46,427	26,714	9,130	17,534	128	3/31	.....	.....
....	13,737	3,643	....	.....	...	4/15	.....	.....
....	60,164	30,257	7,742	22,515	146	4/30	.....	.....
....	15,470	5,318	....	.....	...	5/15	.....	.....
....	75,634	24,939	6,446	18,493	146	5/31	.....	.....
....	11,828	11,828	....	.....	...	6/15	.....	.....
....	87,462	13,111	4,892	8,219	148	6/30	.....	.....
....	5,633	5,633	....	.....	...	7/15	.....	.....
....	93,095	7,478	4,397	3,081	123	7/31	.....	.....
....	2,495	889	....	.....	...	8/15	.....	.....
....	95,590	8,367	5,119	3,248	82	8/31	.....	.....
....	3,983	2,641	....	.....	...	9/15	.....	.....
....	99,573	11,008	6,135	4,873	106	9/30	.....	.....
....	4,600	2,600	....	.....	...	10/15	.....	.....
....	104,173	13,608	5,796	7,812	167	10/31	.....	.....
....	4,674	4,674	....	.....	...	11/15	.....	.....
....	108,847	8,934	4,557	4,377	250	11/30	.....	.....
....	1,752	6,888	....	.....	...	12/15	.....	.....
....	110,599	15,822	7,257	8,565	93	12/31	.....	.....

To the Manufacturing Department Is Left the Task of Coordinating the Sales Requirements with Efficient Manufacturing. Peaks and valleys with excessive labor turnover are avoided as well as unbalanced and unduly large inventories

Form B—Sales and Operating

District..... Month.....

	Actual				Budget				Last Year	
	Month	Per Cent	Year to Date	Per Cent	Year to Date	Per Cent	Total Year	Per Cent	Year to Date	Per Cent
Sales:										
Cook Stove and Heater										
Utensil										
Total Net Sales										
Marginal Allowance:										
Cook Stove and Heater										
Utensil										
Total Margin										
Operating:										
Office and General										
Salesmen										
Warehouse										
Transportation										
Sales Freight										
Total Oper. C. S. & H.										
Total Oper. Utensils										
Total Operating										
On Marginal Allowance Gain										
On Marginal Allowance Loss										

the branch stock standard which, subtracted from the total stock on hand, gives the home office stock; the percentage this bears to the month's sales; and the actual home office, branch and total stock. From the

Form D—Budget Estimated Operating Statement Year 1922

		Per Cent of Total
Net Sales:		
Class "A"	$8,000,000	80.0
Class "B"	800,000	8.0
Class "C"	1,000,000	10.0
Class "D"	200,000	2.0
Total	$10,000,000	100.0
		Per Cent to Sales
Production Costs:		
Class "A"	$4,800,000	60.0
Class "B"	560,000	70.0
Class "C"	650,000	65.0
Class "D"	160,000	80.0
Total	$6,170,000	61.7
		Per Cent
Gross margin	$3,830,000	38.3
Selling:		
Sales administration	$200,000	2.0
General sales department expense	50,000	.5
Special promotion, etc.	50,000	.5
District operating expense	1,600,000	16.0
Advertising "A"	400,000	4.0
Advertising "B"	50,000	.5
Advertising "C"	100,000	1.0
Total	$2,450,000	24.5
Net margin	$1,380,000	13.8

production programs, final revised factory departmental operating budgets are then made up.

The foregoing information, which deals with sales and production budgets, should be supplemented with the financial budgets of the company, which information was first supplied to the fabricated production department of the Chamber of Commerce of the United States

Form E—Budget Estimated Loss and Gain Year 1922

Net gain from operating statement		$1,380,000
Cash discount receivable		50,000
Dividends		20,000
Miscellaneous items		10,000
Deduct		$1,460,000
Net interest cost	$100,000	
Estimated inventory depreciation	260,000	360,000
		$1,100,000
Federal taxes and contingencies		150,000
Total available for dividends and surplus		$950,000

and appears as a part of its pamphlet, "Budgeting for Business Control."

In making up the financial budgets the first form used is an estimated operating statement as shown in Form D, the figures given being hypothetical and used for purposes of illustration. The second form is an estimated statement of loss and gain, Form E, from which it is easy to forecast changes in the balance sheet over the budget period. In regard to preparing the monthly profit and loss statement, it was stated to the fabricated production department of the Chamber of Commerce, by D. C. Lowles, auditor Cleveland Metal Products Co., that the cost of goods sold is compueted on the budget or standard cost, the excess or reduced cost being taken up as a separate item. Inventories are all figured at standard. These standards may be changed during the year if conditions warrant it, and are always revised for inventory purposes at the end of the year.

From the estimated statement of loss and gain, an estimated balance sheet, Form F, may be made to reflect the changes arising during the budget period. In preparing such an estimated balance sheet it is necessary to determine what portion of the estimated surplus should be shown on the estimated loss and gain statement as a distribution to dividends. For this purpose a capitalization of $8,000,000 is assumed, of which $3,000,000 is preferred stock.

Form F—Estimated Balance Sheet

	Assets Dec. 31, 1921	Changes	Est. Dec., 1922
Current:			
Cash	$25,000	$15,000	$40,000
Notes and accounts receivable less reserve for doubtful	1,225,000	125,000	1,350,000
Government securities	1,250,000	100,000*	1,150,000
Inventory	3,200,000	400,000	3,600,000
	$5,700,000	.....	$6,140,000
Subsidiaries	$850,000	$50,000*	$800,000
Investment and other assets	475,000	25,000	500,000
Deferred	500,000	5,000	505,000
Plant and equipment less depreciation	4,500,000	100,000*	4,400,000
Total assets	$12,025,000	.....	$12,345,000
	Liabilities		
Current and accrued:			
Accounts payable	$275,000	$15,000*	$260,000
Accrued taxes, etc.	80,000	20,000	100,000
Reserve for Federal taxes and contingencies	175,000	25,000*	150,000
Funded debt (Notes)	3,000,000	.....	3,000,000
Capital stock (Preferred)	3,000,000	.....	3,000,000
Capital stock (Common)	5,000,000	.....	5,000,000
Surplus	495,000	340,000	835,000
	$12,025,000	.....	$12,345,000

*Deductions.

The loss and gain shown on Form E is $950,000. If dividends on preferred stock at 7 per cent of $210,000, and on common stock at 8 per cent of $400,000—or total dividends of $610,000 are deducted from the profit of the period, there is available as an additional surplus $340,000. On the following estimated balance sheets, Form F, prepared by D. C. Lowles, auditor of the Cleveland company, such $340,000 increases in surplus is reflected together with other changes.

Electric Furnaces for Heating and Melting

American Electrochemists Cover New Ground in Discussing Electric Industrial Heating and Corrosion—Round Table Luncheon Session on Electric Furnace Cast Iron

GIVING new emphasis to its excellent record in conducting symposia, the American Electrochemical Society at its forty-sixth general meeting at the Hotel Tuller in Detroit on Oct. 2, 3 and 4, staged three which added notably to the literature on electric industrial heating, on electric furnace refractories and on corrosion. The corrosion sessions stood out in respect to papers and the time devoted to them—12 papers and two sessions. The symposium on electric industrial heating, with only five papers, was unusually interesting in variety and in animated discussion. As in the past the attendance was large and the discussions full.

A feature of the convention was the round table luncheon at which electric furnace cast iron was the topic. The chief papers and events are reviewed in the following pages:

Symposia on Electric Industrial Heating and Refractories

AT Montreal, two years ago, at its annual fall meeting, the American Electrochemical Society conducted its first symposium on electric industrial heating. It was a highly successful one—the first one also ever held by a technical organization. It dealt more extensively, however, with low temperature applications. (THE IRON AGE, Sept. 28, 1922.)

The one last week at Detroit was less pretentious in the number of papers read—five in all. The discussion was ample and the variety as well as the quality of the contributions were satisfactory.

The organizer and chairman was C. F. Hirschfeld, chief research department Detroit Edison Co., Detroit. In his preliminary remarks Mr. Hirschfeld said that while Detroit engineers were not the fathers of electric industrial heating, much had been done in that city. In the early days it was considered a gamble to start an electric industrial heating process. Now there are many on a large scale in Detroit, which is at present one of the centers in this field. Because of too many "crazy ideas," electric industrial heating is still too much of a gamble in some places. "I personally am trying to bring about more education so as to have fewer failures. Our program today is a record of successes."

Electric Furnaces for Heat Treating

Based on an investigation of considerable scope, Col. A. E. White, University of Michigan, Ann Arbor, Mich., introduced this symposium on Friday morning, Oct. 3, with his paper, "The Use of Electric Furnaces in Heat Treatment." It was not available that morning in printed form, but is by this date, so he presented a liberal abstract.

Professor White compares the various types of heat-treating furnaces, giving examples of performance using various fuels, and also costs of operation—most of this based on actual operating conditions. From this information he is enabled to formulate recommendations for furnace design. Among the factors which the author considers are dimensions, heat differences, distribution of heating elements, insulation, heat circulation, accuracy of temperature control, resistors and various furnace types. From all these standpoints and others he pronounces the electric furnace for heat treating to be advantageous. Appendices to the paper contain definitions, a table showing heating values for iron at different temperatures and heat treatment data from a number of actual plant runs. There is also a complete bibliography.

Describing Professor White's paper as a vast amount of data from a special investigation, the chairman called for the presentation of two other papers before general discussion.

Hardening and Tempering Wire Electrically

The first of these was "Electric Furnace for Continuous Hardening and Tempering Wire," by R. H. MacGillivray, industrial heating engineer, Westinghouse Electric & Mfg. Co., New York. It was presented in abstract by M. B. Carr in the absence of the author.

The paper is based on experiments carried out for the Stewart-Hartshorne Co., East Newark, N. J. The author asserts that the electric furnace has proved an economic factor in hardening and tempering steel wire and that it has been extremely successful. Even distribution of heat throughout the furnace chamber, with absolute control of temperature at the proper point required insure a uniformly satisfactory product, with few or no rejections due to improper heat treatment. The paper is brief, and contains illustrations of various phases of the process.

Annealing Brass Tubing Electrically

The subject of the second paper was "Annealing Brass Tubing in the Electric Furnace," by Robert M. Keeney, industrial heating engineer, Westinghouse Electric & Mfg. Co., Boston, Mass., also presented in abstract, in the absence of the author, by Wirt S. Scott. This paper demonstrates that the annealing of small brass tubing is more economical with electricity than with wood; the installation described is that at the plant of the French Mfg. Co., Waterbury, Conn. The details of the furnace are given and some facts as to cost, together with other information.

Discussion

In the discussion of the three papers Mr. MacGregor, Wolverine Tube Co., Detroit, said that the use of wood had long since been abandoned for annealing brass tubing; that oil had largely taken its place. He agreed with Mr. Keeney that the brass and copper industry has been, and in many cases still is, too secretive and conservative—"as many as 200 years behind the times." He considered the annealing of copper as important as that of brass, and declared that the industry was getting more and more into the use of electric heating and melting.

In some of the General Electric Co. iron plants oil furnaces are used in preference to electric for certain purposes, said E. F. Collins, heating engineer, of that company. They had investigated the relative merits of the water-sealed electric furnace with the oil-fired, and one striking fact they had discovered was that with electricity it had been possible to obtain a degree of softness impossible with the use of oil. The fundamental proposition is one of cost as between oil and electricity—one to be rejected for the other and vice versa in certain cases.

Replying to a question by George M. Berry, chief chemist Halcomb Steel Co., Syracuse, N. Y., as to the flexibility of the electric heat-treating furnace, Professor White said he had not much data on the increased flexibility of this furnace—"a furnace is a furnace." The degree of flexibility is probably the same as in a gas or oil furnace, for in heat treating it is not practicable to go above 1700 deg. Fahr. The efficiency of

coal is from 40 per cent up to 85 per cent when the furnace is hot and the relative difference is the same for gas or oil. Present resistor elements have a limit of about 1800 deg. Fahr., but there are one or two products reported about to come on the market having a range up to 3000 deg. Fahr., which, it is understood, will be successful as soon as proper methods of contact are perfected.

Professor White spoke of a new so-called "compensating" furnace for heat-treating with electricity which has been described as having an efficiency of "150 per cent." This electric furnace, which was visited later that day in operation at the plant of the Hudson Motor Car Co., is used for heat-treating cast iron—that is, annealing small iron castings. It takes care of about 22 lb. of metal per kw. hr. and increases the output of the machine shop decidedly.

Fast Electric Brass Melting

A more interesting paper at this same session dealt with another application of electric heating—"Electric Brass Melting," by F. S. Heath, works manager Federal Mogul Corporation, Detroit. Mr. Heath read his paper, which was still in the printer's hands.

It is full of valuable practical data and deals with his own foundry's experience in melting about 15 different bronzes—about 23,000 lb. per day. The author stated that one of the greatest potential fields for the electric furnace is in small foundries and that small furnaces are more flexible than coke-fired crucible ones. The secret, in his opinion, of economical melting is to keep the furnaces melting on as high an electric input as possible. His company has three (two more later) 250-lb. Detroit electric furnaces, taking care of about 230 lb. to the charge in 70-lb. crucibles. From 12 to 15 heats per day is the rule. On one day 21 heats were made from 6.15 a.m. to 3.15 p.m., with the average time per heat 17 min. plus 6 min. for charging and emptying, or 23 min. in all.

The largest number he has obtained from his coke-fired furnaces was 6 heats per day. The limiting factor to the electric furnaces was a lining. The average consumption of electricity had been about 325 kw. hr. per ton and 6.5 lb. of electrodes per ton. The author enumerated the advantages of these electric furnaces and gave the physical properties of the electrically melted bronze as compared with the coke-fired furnace's product. The comparative cost he put at about $3.50 per ton in favor of the electric melting.

Discussion

The speed element was pointed out by George K. Elliott, chief metallurgist Lemkenheimer Co., Cincinnati, as the feature of Mr. Heath's paper. At the round-table discussion on electric brass furnaces at this society's convention in Dayton, Ohio, a year ago, a fear of rapid melting was mentioned. The speaker said he was not surprised that the metal was uninjured at Mr. Heath's plant and cited as a parallel the rapid melting of steel.

Mr. Elliott added that he had heard of a rapid oil-melting process using high pressure, the time required being 10 to 20 min. per heat. This might develop into a competitor with the electric unit.

Responding to a query by F. A. J. FitzGerald, Niagara Falls, N. Y., as to why linings fail, Mr. Heath said this was due not to the melting of the lining, but to its tendency to crack, resulting in harm to the insulation, etc.

A discussion of the speed of melting would be incomplete, said H. M. St. John, chief metallurgist Detroit Lubricator Co., Detroit, if the mixing of the charge were not included. Rapid mixing insures faster melting and this is a feature of these furnaces. Linings, of course, fail from cracking.

John A. Leede, electrical engineer, General Electric Co., Schenectady, N. Y., also cited agitation as to the feature of the splendid results described in Mr. Heath's paper. In reply to Mr. Leede's question as to how many days do 1000 heats mean, the author said 60. To other questions Mr. Heath explained that 0.60 per cent loss meant entire metal loss and not zinc alone, and that the $3.50 saving did not include the crucibles used to carry the metal to the molds.

This symposium closed with a paper by Harry Allen on "Electric Japanning," presented from manuscript by the author.

Symposium on Refractories

The second symposium of the two on this program was a brief one of three papers on "Electric Furnace Refractories." This was a direct outgrowth of the round-table discussion on this subject at the Philadelphia convention last spring. (THE IRON AGE, May 1, 1924.)

In the absence of the organizer of this symposium, Dr. M. L. Hartmann, director of research laboratory, Carborundum Co., Niagara Falls, N. Y., the chair was taken by F. A. J. FitzGerald of the same city.

Carborundum Refractories

The first paper, "Thermal Conductivity of Carborundum Refractories," by M. L. Hartmann and O. B. Westmont, both of the Carborundum Co., was presented in abstract. The authors contend that of all refractory materials commercially available there is none which even approaches silicon carbide, or carborundum, in its ability to transmit heat readily and which at the same time possesses sufficient mechanical strength and chemical inertness to resist the destructive forces in modern industrial furnaces. Tables are given showing the coefficients of thermal conductivity and heat flow through various types of walls with a temperature of 1500 deg. C. in the combustion chamber.

Artificial Sillimanites

"The Preparation of Artificial Sillimanite for Refractory Uses," by C. E. Sims, H. Wilson and H. C. Fisher, northwest experiment station, Bureau of Mines, Seattle, Wash., was abstracted by C. E. Williams of the same station. A brief summary follows:

> The experimental work leading to the adoption of a furnace for the preparation of artificial sillimanite is described. Clay was found to be peculiarly difficult to melt, but could be reduced to sillimanite by elimination of the excess silica. Natural sillimanite has a different composition from the synthetic product. Artificial sillimanite containing excess silica is vitreous; that with excess alumina is stony. The latter form has excellent refractory properties as compared to silica and magnesite brick. Lime is a particularly undesirable impurity.

Fluorine in the Slag of Basic Electric Furnaces

A paper by Frank T. Sisco, metallurgist, Air Service, War Department, McCook Field, Dayton, Ohio, entitled "Fluorine in the Deoxidizing Slag and Its Influence on Refractories in Basic Electric Furnace Practice," was the third of this group.

Gray Iron Made in Electric Furnaces

UNFORTUNATELY for those unable to be present, many interesting problems and solutions brought out at the round-table luncheon Thursday noon on electric furnace cast iron cannot be published. It is always understood that these gatherings are not to be reported and that each speaker can be free to speak his mind. Only a few features can be outlined.

At the fall meeting in Dayton last year the first round-table luncheon ever held by the society was inaugurated. (THE IRON AGE, Oct. 4, 1923). Its success was so pronounced that another was conducted at the spring meeting in Philadelphia. The first one dealt with electric brass furnace melting; the latter with electric furnace refractories.

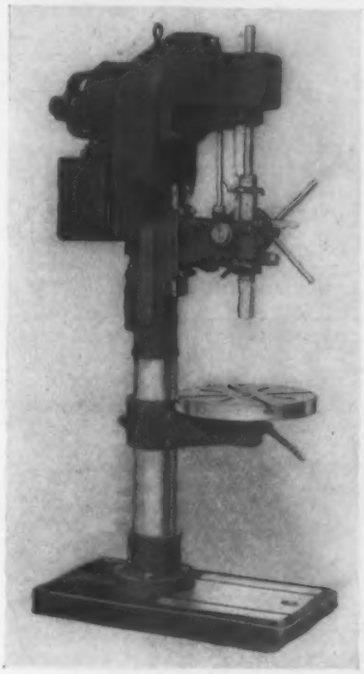
About 150 sat down at the luncheon last week, which was organized by George K. Elliott, chief metallurgist, Lunkenheimer Co., Cincinnati, who was gen-

(*Continued on page* 959)

Direct-Drive Movable-Head Drill

The direct-drive movable-head upright drilling machine shown in the accompanying illustration, which was developed by the Cincinnati Bickford Tool Co., Cincinnati, primarily for automobile shop use, was among the new equipment shown at the International Steel Exposition held at Boston, Sept. 22 to 26. Simplicity and durability are among the features claimed for the machine, which drills to the center of 21 in.

The spindle operates at but a single speed and feed, a range within the general limits of 48 to 707 r.p.m. and 6 to 30 thousandths per revolution being available. The spindle is 1 5/6 in. in diameter and is bored to fit Morse taper No. 3. The vertical travel of the spindle, with and without the trip dog gives 8 in. and 8 15/16 in. respectively. The spindle sleeve is 2½ in. in diameter.



Direct-Drive Movable-Head Upright Drill. The head may be placed in three vertical positions, the extremes of which permit a range of 5 in. The spindle operates at but a single speed and feed, a range of 48 to 707 r.p.m. and 6 to 30 thousandths, respectively, being available

The head may be placed in three vertical positions, the extremes of which permit a range of 5 in. The motor is mounted upon a bracket which is made to adjust vertically in order to obtain a correct meshing of such ratios of gears as may be required. An eyelet at the top of the machine facilitates handling, and an opening is provided at the back of the column to permit of convenient access to the counterweight and chain.

The maximum distance from the spindle to the table is 2 ft. 4⅝ in., and to the base, 3 ft. 8¼ in. The table of the machine, which is 19 in. in diameter, may be moved 17⅝ in. vertically. Its maximum height from the floor is 2 ft. 10¾ in. The diameter of the column is 6 in. The machine may be provided with a hand-feed pilot wheel and tapping attachment and with a belt drive, pump and oil grooved table. A 2 hp. motor is employed. The height of the machine, from the floor to the top of the spindle is 7 ft. The weight, plain, is 1275 lb. net, the weight with power feed and tapping attachment being 50 lb. additional for each attachment.

Arranged as a single table gang drill, the machine may be provided with from 2 to 6 spindles, which may be mounted on a high or on a low base.

The executive committee of the Associated States Opposed to Pittsburgh Plus will hold a private conference at the Old Colony Club, Chicago, Oct. 11. The executive committee consists principally of attorneys general of Western States.

Hammer for General Shop Service

A utility hammer for general shop service, and arranged for either belt or motor drive, has been bought out by the Beaudry Co., Inc., Everett, Mass. Three sizes, having a ram of 25, 50 and 100 lb., respectively, are available.

The general construction of the hammer may be noted from the accompanying illustration. The ram or hammer head is of steel and has external elliptical-shaped tracks. Two steel spring arms with steel rollers at the lower extremities and a helical spring at the top operate upon the curved tracks and lift and throw the ram, which, with increased speed of hammer is said to acquire increased travel and force of blow. The full stroke can be had on varying thicknesses of stock and change of adjustment is unnecessary except for unusually heavy or special work.

The hammer is started, stopped and regulated by a foot treadle extending around the base of the machine, as shown, and by a varying pressure on which is obtained any desired speed or force of blow. The ram is fitted to heavy guides and is adjustable on its connecting rod for varying heights above the dies. It has an adjustable taper gib for taking up wear. The machine is intended to be worked with equal advantage from all sides, the anvil clearing the main frame casting, allowing bars of any length to be worked either way.

The hammers may be operated by an overhead belt running at any angle or by a motor attached to the frame as shown. They may be converted into a motor-drive unit without any mechanical change except for the bolting of the motor bracket and the attaching of the motor to it.

Three Sizes Are Available. The hammer is started, stopped and regulated by means of the foot pedal, by a varying pressure on which any speed or force of blow may be obtained. The machine may be worked from all sides

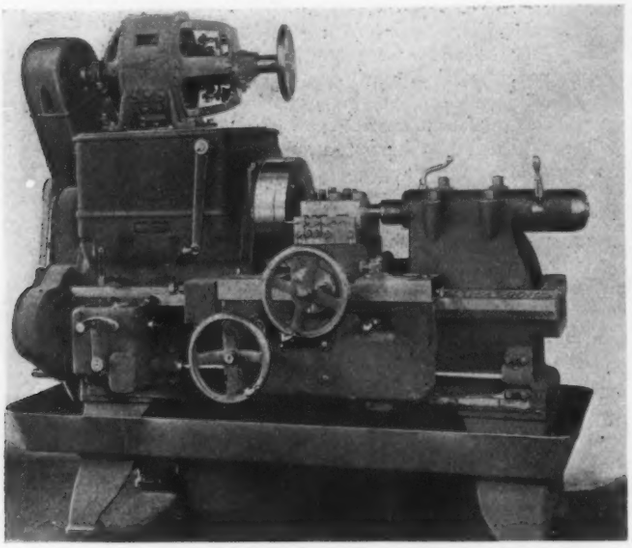
The smallest machine will work stock up to 1½ in. square, the largest machine being rated for work up to 3 in. square. The number of blows a minute are 400, 350, and 300, for the three machines. The floor space occupied by the smallest machine is 16 x 21 in., and by the largest 24 x 28 in., the height of these hammers being 60 in. and 76 in. respectively. The motors employed are of 1, 2 and 3 hp. The weights of the machines are approximately 850, 1500 and 2500 lb., respectively.

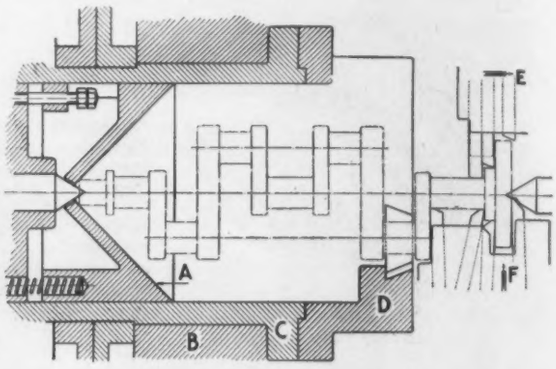
During the first eight months the Class 1 railroads earned $561,059,355, or at the annual rate of 4.09 per cent on their tentative valuation, according to the Bureau of Railroad Economics.

LARGE BORE LATHE

Hollow Spindle Construction Permits Telescoping of Work Inside of the Headstock

A lathe having a special enlarged hollow spindle construction, which permits the telescoping of work inside of the headstock so that the extended portion of the work may be completely machined with a chuck drive close up to the portion being turned, has been placed on the market by the Reed-Prentice Co., Worcester. The ruggedness of construction permits extra heavy series of cuts to be taken at one time, both with the front and rear tools, as in the machining of crank shafts, armature shafts and other work in which it is an advantage to reduce the overhang to a minimum.





Lathe With Enlarged Hollow Spindle to Permit Telescoping of Work Inside the Headstock. The tooling layout for the flange end of an automobile crankshaft is shown above. The sliding bellmouth for locating work is shown at *A*. *B*, *C*, *D*, *E* and *F* are headstock, hollow spindle, chuck, turning tools and facing tools, respectively

The tooling layout for the machining of the flange end of an automobile crankshaft is shown in the right-hand illustration. The crankshaft is supported between centers and driven by a special chuck gripping on the crankpin adjacent to the portion being machined. The hollow spindle permits of telescoping the crankshaft, providing substantial support for the work, and placing the chuck driver directly on the spindle flange with a minimum of overhang. The rear tools turn the flange bearing and its shoulder, also the outside diameter of the flange, while the front tools face the surfaces shown. By means of a special rear slide construction, the burden of the cutting is taken with the down pressure on the front block, and both the front and rear tools operate simultaneously.

The large diameter hollow spindle is driven by herringbone type gears of hardened steel, with splash lubrication. All auxiliary shafts run in annular ball bearings. Drive may be by belt to single pulley, or by motor mounted on top of the box type headstock. A lever mounted on front of the headstock near the front bearing serves to operate a disk type clutch for starting the lathe or quickly stopping it by means of the brake in conjunction with the clutch. Motors from 5 hp. to 20 hp. may be employed, depending upon amount of material to be removed or number of cuts to be taken at once. The tail stock spindle is advanced or withdrawn by cam action.

Inside of the hollow spindle is a cone shaped guide, which serves to locate the end of the shaft to be turned on the line center. Back of the guiding cup is a spring to force it out where it may be in position to perform its duty.

In addition to the regular bearings on ways, the carriage is supported on a right angle bearing inside the bed directly under the front tools. Independent longitudinal and cross feeds are available, change from one to the other being made by a pull gear controlled from the front of the apron. Direction of feed is also controlled by a lever placed at the front of the apron. Trips are provided for both feeds in either direction. It is said that by use of suitable stops very accurate positioning of tools may be obtained. Cross feed hand wheel has micrometer dial. Feeds are four in number with provision for three more by compounding.

These feed changes are secured by movement of hardened steel sliding gears operated by a crank handle at the front of the gear box. A suitable index is placed in convenient position. The machine is entirely automatic in its cycle of operations, including control of diameters and length of work through stops mentioned above.

Tool and Alloy Steels

In its catalog of hot rolled, hammered, cold rolled and cold drawn tool and alloy steels and forgings, the Carpenter Steel Co., Reading, Pa., has produced an exceptionally attractive work of 260 pages. The different sections devoted to different products are segregated by the use of colored paper, while for the large number of trademarked steels the trademarks in their full color are shown. As these colors run almost entirely through the list, the printing effect is exceptionally fine.

The work is divided into 13 sections, devoted respectively to carbon tool steels, high-speed tool steels, special alloy cutting steels, cutlery steels, steels for hot work, steels for cold work, non-corrosive steels, machinery and miscellaneous steels, industrial alloy steels, forgings, cold rolled and cold drawn specialties, testing and standard tables and useful information. The latter item covers 55 pages, being followed by a comprehensive index of 14 pages. Directions are given as to the ordering of tool steel, particularly regarding specifications to be met. Allowances for machining are indicated and every effort is made in the book to see that the customer gets what he wants. The book is bound attractively in limp leather and has gilded edges.

Examination is announced by the United States Civil Service Commission for junior physicists for the Bureau of Standards, Washington, at an entrance salary of $1,860 per year, with advancement to $2,400 later. Full information and application blanks may be obtained from the commission in Washington or from the civil service examiners at any custom house or city post office.

Changes in Freight Rates Are Expected

Abolition of Pittsburgh Plus Promises to Have Important Effect on Railroads—Traffic Analyst of Federal Trade Commission Makes Statement

BY L. W. MOFFETT

WASHINGTON, Oct. 6.—Readjustments being made and attempted by the steel industry in quoting prices so as to obey the order of the Federal Trade Commission in the Pittsburgh plus case have made it evident that the element of freight rates has become increasingly important. At the commission offices, it was stated that the problems arising were to be expected, but it is the belief there that they will be only temporary, and, unlike the trade itself, commission representatives do not share the opinion that any serious disturbance has resulted or will result in the effort to merchandise steel products under the new method of quoting.

"It seems inevitable that some change will take place, both in the direction which finished steel will take from some of the principal producing points and in the length of the hauls," said Hugh E. White, traffic analyist of the Federal Trade Commission, who was in charge of preparing freight rate and other data throughout the hearing in the Pittsburgh plus case. "As Judge Gary has stated, 'Freight rates are very largely the determining element in the market for any commodity, and those markets are susceptible of mathematical demonstration by reason of the freight rates.' It is obvious that under the Pittsburgh plus system the Pittsburgh producers were under no disadvantage at any point; there was a nation-wide market for them, the transportation element of price being paid by the consumer. There was, therefore, no incentive for the Pittsburgh producers to depress the Pittsburgh rate, the normal basis on long-haul traffic east of the Mississippi River being fifth class, or on a parity with the great bulk of articles manufactured from steel. On the other hand, there was incentive to hold to a minimum the freight rate from producing points other than Pittsburgh, those rates being paid by the producers, which in many cases are very much less than fifth class. As an illustration, it may be noted that the rate from Buffalo to Pittsburgh, which is paid by the producer, is but 80 per cent of the fifth class rate from Pittsburgh to Buffalo, which was paid by the consumer.

Cross Hauls to Be Reduced

"With a mill base in operation, with producers at different points controlled by different groups of capital, there will unquestionably be a tendency for freight rates to allocate certain business to certain mills, under normal conditions. The cross-hauls should be measurably decreased. As an illustration, Duluth may not expect to see over 50 per cent of its steel bar production shipped to Illinois and Indiana and eventually Bethlehem may be expected to ship fewer standard structural shapes into the city of Pittsburgh, and Pittsburgh mills may be expected to ship less into the Philadelphia district. The lines of friction between producers will become more definite, and it is to be expected there will be considerable complaint concerning the relativity of rates from many producing points."

The statement of Mr. White expresses views that correspond with those submitted in evidence for the commission during the hearing. It presents the situation as to readjustments that the commission expects will be necessary and controlled largely by freight rates. It goes back to the zone system of marketing iron and steel. The contention that there was no incentive to depress Pittsburgh rates was repeatedly made, although one not accepted by the trade itself. In appearing before the Interstate Commerce Commission, steel manufacturers have argued frequently that high freight rates were a barrier to a normal expansion of business, but the position of the Federal Trade Commission seems to be that relatively no incentive existed for bringing down Pittsburgh rates.

The Jones & Laughlin Case

It was during the proceedings, however, that what is known as the Jones & Laughlin Steel Corporation case came before the Interstate Commerce Commission. It was complained that the fifth class rate on steel products from the Pittsburgh district is too high and is greater than from competing centers. Examiner William A. Disque, in a report to the Interstate Commerce Commission, last May, sustained the view of the complaining Pittsburgh steel producers and recommended a 20 per cent reduction. Specifically he held that rates on manufactured iron and steel products in carloads from points in the Pittsburgh district to St. Louis and points in Illinois and Indiana are unreasonable to the extent that they exceed 80 per cent of the fifth-class rates, or the equivalent of sixth-class rates. At the same time he held that commodity rates on the same products from Illinois and Indiana points to the same destinations are in many instances "productive of unlawful preference, prejudice and discrimination." The examiner recommended no order, but suggested that the interested parties be given an opportunity to work out a general revision of the rates "so that in the aggregate they would approximate the basis prescribed from the Pittsburgh district."

Decision Awaited with Interest

Considered from the outset as one of the most important iron and steel rate cases ever coming before the commission, this proceeding has taken on even greater importance and its outcome through a decision by the commission is being awaited with added interest in view of the readjustments necessary in quoting prices, either on an f.o.b. mill or delivered basis. The Chicago district, it has been maintained by those opposed to the Pittsburgh base, will especially profit by the new method of quoting, but there are those in the trade who say that the advantage to Middle Western mills will be reduced considerably at least if the report of Examiner Disque is acted upon along the line suggested. It is held to be a rate case that now will be highly important in making or restricting markets. The rates that would arise from such action are carried in the report of Examiner Disque which was published in THE IRON AGE of May 22, page 1505. The examiner in his report made the interesting statement that "in recent years the business from the Pittsburgh district has fallen to a mere fraction of its former volume." The examiner was speaking in terms of competition in the destination districts, the purpose being to show that the freight rate advantage lay with the Illinois-Indiana mills against the Pittsburgh mills and that it was this that reduced the business from Pittsburgh mills. His report would indicate a sharp difference of view with that of the Federal Trade Commission as to the importance of the Pittsburgh plus method of quoting prices.

This is the immediately outstanding steel rate case pending before the commission because of the effect the decision may have on the readjustment of quoting prices. But at the same time interest is being manifested to see if the trade appeals for other readjustments of freight rates in view of the new price-quoting

plan. It is doubtful, however, in the opinion of interested people here, that any broad readjustment of the construction of long-and-short haul rates will be likely. The Interstate Commerce Commission has some latitude in this direction, yet it is restricted up to a point, as fundamentals are affected, by the law itself. This is an important phase, nevertheless, in view of the necessity of quoting delivered prices based on the shortest haul.

The opinion persists that freight rates will reduce cross hauls, localize more and more business of steel centers, some taking from others, and in cases giving to others, bringing about an equalization rather than a reduction of trade. This at least is the Federal Trade Commission idea. It is the view in the Pittsburgh district that mills there will suffer by reduced business unless relief is given them through lower freight rates, and this, it has been pointed out, would probably be only a partial solution.

Analyzing the Situation

The matter of quoting f.o.b. or even delivered prices at some points not yet affected is said to be in abeyance pending analysis of the freight rate situation. It is believed that in the end this will change the area of business to a great extent so far as some mills are concerned and Mr. White's statement has indicated it would do so in the case of the Duluth plant of the United States Steel Corporation. It appears to be the belief of the Federal Trade Commission that business of this mill will have to be sought further northward and westward and will be unable to meet competition as far south and southwest with Chicago district mills, as it did in the past. The point of cost of some mills also is an element in making f.o.b. mill and delivered prices and where the cost is high it is claimed the industry has a problem in naming a price which will be adequately competitive to continue satisfactory operations. Even where there is only one mill, as in Duluth, it is contended by men in the trade at least, even if the idea is combated from other sources, it is in no position to name an excessive figure because competition is too near and keen as one element and that moreover the Steel Corporation has made it plain that its prices will be proportionately the same, not uniform at all mills, naturally, but so adjusted that there will be a close relationship of all factors. The fact remains that costs of production as well as freight rates have to be considered.

Judge Gary's Testimony

In this connection it is interesting to recall the testimony of Judge Gary when he testified in the Pittsburgh plus case. He said:

"In the first place, I want to say that in the manufacture of pig iron Duluth is nearly as good a point as the other manufacturing points, on the same basis of the quality of importance, with the exception of Birmingham. Birmingham can manufacture iron $3.85 cheaper per ton than it can be manufactured in Duluth. But as to steel products, the composite cost of the different steel products, based on one ton of each kind of product produced in respective districts, shows Duluth's costs to be higher than Gary by 38 per cent, than Birmingham by 39 per cent, than Pittsburgh by 13 per cent, and this notwithstanding Pittsburgh has not yet been provided with by-product coke and some other things essential to make the cost the lowest."

The figures given were applicable to a period before Pittsburgh had been fully provided with by-product coke, and it is assumed at present the cost spread is still greater. The Duluth example is given as only one of many which are involved in readjustments yet to be made and which must take into account production costs and freight rates along with other elements. Developments in the freight rate situation in Washington are in consequence being awaited with the greatest interest.

The Engineering Foundation, 29 West Thirty-ninth Street, New York, seeks a fund of $100,000 with which to carry out arch dam tests on the Pacific Coast. Plans include the building of an experimental arch dam, which is to be "tested to destruction, if possible."

Buyers Not Benefited in New England

BOSTON, Oct. 7.—The elimination of the Pittsburgh plus base so far has not resulted in any advantage or disadvantage to the New England buyer of mill products. He is paying just as much for material as heretofore—no more, no less. Practically everything offered by the mills is on a delivered basis. For instance, Pittsburgh district made bars are offered in car lots at $2.36½ per 100 lb. delivered, and in less than carloads at $2.42, base, the freights in these instances amounting to 36½c. per 100 lb. and 42c., respectively. Cleveland and Chicago district made bars are offered in car lots at $2.43 delivered, base, and in less than car lots at $2.51, the freights being 43c. and 51c., respectively. Thus in both cases the price figured back to the shipping point is 2c. Buyers claim bars are offered in some cases at $2.26½ delivered carrying the Pittsburgh freight and $2.33 carrying the Cleveland freight, but that the largest mills are holding to a basis of 2c. shipping point. New England made bars are offered delivered here on the same basis as are Pittsburgh district.

Discounts on bolts and nuts remain as heretofore, and to date the mills have not changed the price at mill. To date, New England made bolts and nuts cost the buyer just as much delivered as do those made outside these States. Wire nails are offered here by Pittsburgh district mills at $3.14½ per keg base delivered, the freight being 39½c. per 100 lb. and the f.o.b. Pittsburgh price $2.75. Those offered by Chicago and Cleveland mills figure back to $2.90 f.o.b. Nails made in New England cost delivered just as much as do those made in Pittsburgh; so there is no advantage gained in buying the New England made product.

Decreased Melt of Ohio Foundries

The Ohio State Foundrymen's Association, Cleveland, reports that the month of August shows further decline in foundry operations. The actual melt for August was 54.2 per cent of capacity; July stood at 62.5 per cent and August, 1923, approximately 79 per cent.

The foundries reporting could have melted 28,400 tons of metal; against this was actually produced 15,403 tons of metal, which equals an actual melt of 54.2 per cent.

Stocks on hand show a slight increase. August indicates a percentage of 87; July stood at 85 and August, 1923, 101. The stocks on hand are made up of all the grades of pig iron and all of the grades of non-ferrous materials on hand with numbers reporting. Stocks received have declined; August stands at 42 per cent; July stood at 49 per cent and August, 1923, at 65 per cent.

Production of Radio Apparatus

Census Bureau figures show the 1923 production of radio apparatus to have been $43,460,676, in 290 establishments, with $4,572,251 additional for radio tubes. No comparative figures for 1921 were compiled. Receiving sets aggregated $12,616,193, of which $12,065,992 were of the tube type. Loud speakers at $5,620,961 and head sets at $5,352,441 were the next largest items, followed by transformers, $3,773,213, transmitting sets, $900,230, and rheostats, $716,774. Miscellaneous parts to the value of $14,284,330 were produced.

Locomotive Shipments and Orders

Locomotive shipments in September are reported by the Department of Commerce at 104, compared with 139 in August and with 335 in September, 1923. Of the current number, 79 are for domestic use and 25 for export. Except for April and February last, the total is the lowest in more than two years.

Unfilled orders at the end of September were for 386, of which 53 were for export. With two exceptions this is the lowest total for more than two years. One year ago the figure was 1178; 18 months ago it was 2316.

To Stabilize Employment and Purchasing

Railroads Endeavoring to Assist in Improving Business Conditions—New York Meeting to Be Followed by Other Action

WASHINGTON, Oct. 6—The iron and steel industry is taking deep interest in the recent action of the Executive Committee of the Association of Railway Executives in New York, when, among other things, it adopted a resolution and appointed a committee to carry it out looking to additional progress in aiding the stabilization of general business conditions. Specifically it is proposed to avoid, as far as practicable, the reduction of forces and of purchases in dull times and of distributing the expenditures more equally between the times of depression and times of prosperity. The greatest individual source of purchases from the iron and steel and other industries, the plan of the railroads to plane out working forces and purchases so as to spread them more evenly throughout the various periods of their activities is held to give much promise of improving operations of industrial enterprises through stabilization.

The resolution adopted by the Executive Committee follows:

"1. That, notwithstanding the necessity which unfortunately from time to time is forced upon the railroads to curtail purchases and reduce forces because of serious falling off in the volume of traffic or because of inadequate rates, resulting in meager and inadequate operating revenues, the railroads, in the continued effort to promote economy and efficiency of operation and the best interests of their employees, and to contribute as largely as possible to the stabilization of general business conditions, hereby declare their purpose to enter upon an immediate inquiry into the practicability and the means of further stabilizing work and employment, and to seek a conference with the Interstate Commerce Commission upon the subject, in order to obtain its views as to the important accounting and financial problems involved and to enlist its sympathy and assistance in working out a practical and helpful result.

"2. That the chairman is directed to appoint a committee to make a thorough study of the subject, develop its various phases, confer with the Interstate Commerce Commission in respect to it, inviting its suggestions and assistance, and make report to the Executive Committee as soon as practicable."

To Distribute Purchases

No date has been set for the conference between the Interstate Commerce Commission and the committee, but it is probable that it will be held in the near future. The plan to distribute more evenly purchases by the railroads is a new turn in the program of the railroads to obtain supplies. While necessarily market conditions will always be a factor of great importance, and will play a most influential part in getting supplies, the movement is consistent with efforts to plane out the so-called business cycle so as to give stability to business to the mutual benefit of sellers, buyers and employees, and to recognize fully the economies of the situation that it is expected to develop. The New York meeting reported that cooperation with shippers and the public generally already has developed most satisfactory results, and the forthcoming conference with the Interstate Commerce Commission is for the purpose of further development of such cooperation. It was pointed out at the meeting that the establishment by shippers, at the request of the Car Service Division of the American Railway Association of Regional Advisory Boards made up of representatives of the shipping public for conference and suggestions to railroad managements regarding the needs of the public for service, and for discussion of the problems both of the shipping public and of the railroad management, has proved itself to be of the greatest advantage in bringing about a satisfactory solution of service problems and been approved by the public generally and public authorities.

Valuable Information

The railroads already have gathered statistics which will be of importance in working out the program as to stabilization of employment and purchases. Based on an extensive study, figures have been compiled showing the extent of direct railroad purchases by Class I railroads during the calendar year 1923. Returns from the questionnaire prepared by the Bureau of Railway Economics covered carriers representing 223,065 miles of line. The purchases reported do not cover amounts charged to operating expense in 1923, as the latter would cover not only certain current purchases, but would include materials and supplies withdrawn from storage. It also has been pointed out that the study did not take into account materials and supplies purchased indirectly through contractors for railroad construction. Were it possible to include such indirect purchases with those made directly by the railroads, the amount would be increased perceptibly. Particularly would that be true in the case of steel, lumber, cement and other materials used in the construction of railroad equipment and buildings, a large portion of which are constructed by outside contractors.

From the study made it was estimated that $1,738,703,000 was expended during 1923 in direct purchases

Purchases of Iron and Steel and Non-ferrous Metals by Class I Railroads by Districts in 1923

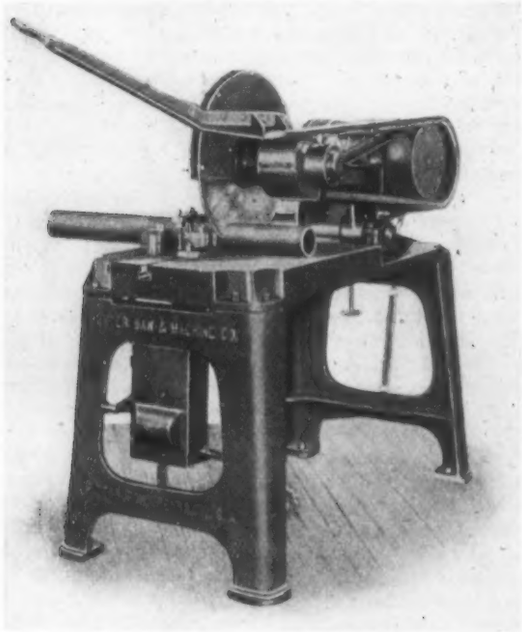
	Eastern District	*Southern District, Including Pocahontas*	*Western District*	*United States*
Steel rails—gross tons	793,000	427,000	668,400	1,888,600
Steel rails—value	$33,809,000	$18,044,000	$29,112,000	$80,965,000
All other iron and steel—value	180,986,000	62,569,000	140,435,000	385,990,000
Total	214,795,000	80,613,000	169,547,000	464,955,000
Non-ferrous metals—value	33,168,000	6,016,000	18,061,000	57,245,000
Grand total for all purchases—value	765,707,000	312,314,000	660,682,000	1,738,703,000

of steel, fuel, and other supplies. Freight and handling charges are included, so that the amount represents the delivered cost to the railroads of their purchases.

The total amount paid for iron and steel was approximately $464,955,000, which included an expenditure for steel rails of $80,965,000. The remainder, $383,990,000, was paid for such products as structural steel, steel castings, and the many other articles of these materials needed in railroad operation. About 1,888,600 gross tons of steel rails were purchased by the Class I railroads last year. Production of all steel rails, including the lighter grades, in 1923, was 2,904,000 gross tons, so that Class I railroad purchases represented 65 per cent of this total, but the figure is undoubtedly considerably larger when only standard steel rails are considered. For metal products other than iron and steel, such as brass, lead, zinc and copper, Class I railroads in 1923 expended approximately $57,245,000. More than one-third of the total expenditure, or about $617,800,000, was for fuel. Of the several kinds of fuel, the largest outlay was for bituminous coal, for which $519,007,000 was paid. Fuel oil was next in rank, $75,867,000, while $18,195,000 was paid for anthracite coal. In addition about $4,731,000 was paid for other kinds of fuel, such as coal and gasoline. Purchases of soft coal amounted to 154,902,000 net tons, or about 28.4 per cent of the total year's output of 545,400,000 net tons. About 5,016,000 net tons of anthracite coal was purchased, or 5.2 per cent of the total production of 95,444,000 net tons.

High-Speed Metal Cut-Off Saw

A machine designated as the No. 1 and employing a high-speed circular saw for cutting cold metal has been placed on the market by the Hunter Saw & Machine Co., Pittsburgh. The smaller light section beams, channels, angles, brass, copper, structural and welded tubing; fence and fire escape materials, metal moldings and furniture parts, and light section pressed and drawn steel shapes are among the materials which may be cut by the machine.



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The motor support is provided with screws for adjusting belt tension. The motor end of the tilting beam is connected with a spiral spring and an adjustable cushioned stop to return the beam to the height necessary to clear the material being cut. The saw is fed down through the work by the hand lever attached to the forward end of the tilting frame. The table has a graduated quadrant stop that may be set within the sweep of the saw blade used. This stop is held by two bolts placed in tee slots.

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A crane too light for the job at hand is a continual source of expense and delay to production, the total of which may, in many cases, equal each year the entire purchase price of the crane when an expenditure of 25 per cent more in the first cost would have eliminated all of the annoying and expensive delays. For this reason it is advisable, when purchasing cranes, to buy the one that fits the needs of the shop and, in some cases, to have the crane specially designed, where standard cranes do not fit in.

Safeguards in Handling Cranes

Platforms should be provided for in designing a crane, from which bridge truck wheels can be lubricated conveniently and safely. Also, a platform upon which a man stands while making repairs to trolley shoes is entirely feasible when these shoes are not located on top of the bridge girders. On the heavier duty four-girder cranes it is generally possible to provide a platform upon the trolley for efficient sheave lubrication and inspection. On runways where only two cranes are installed, platforms can generally be arranged at each end of the building, so that the cranes may be run to their respective ends and all truck wheels made accessible from these platforms, thus eliminating the platforms on the cranes themselves.

Dynamic braking, properly installed and equipped with ample holding brakes for use when the load is at rest, is the safest and most satisfactory method of braking. A hazard in connection with crane operations which can be almost entirely eliminated when the crane is built is that due to slippery rails. Adequate facilities for the proper sanding of the rails should be insisted upon, and the control of the sanding equipment should be in the operator's cab. Another feature which should be embodied is the safety light. The construction and size of the operator's cage is important. On cranes handling molten metal ample provision must be made so that the operator can get out of the crane quickly in case of trouble.

In regard to operation of cranes, the importance of the craneman taking orders from only one man is vital. A frequent cause of accident is due to the common practice of the operator trying to handle more than one motion of the crane at a time. The operation of a crane should be in the hands of no more men than is necessary to operate it throughout the 24-hr. period. It has been found desirable sometimes to give crane operators a certain amount of experience with crane repair gangs. And further to insure safety of operation, it is practically necessary that frequent crane inspections be made by competent inspectors, and in large plants the inspection should be made in cooperation with the mechanic in charge of repairs. In smaller plants the inspections should preferably be made by someone outside of the department involved.

Chains for Cranes

A. V. De Forest, research engineer American Chain Co., presented a paper on "Safe Operation and Use of Crane Chains." He said that the desirable qualities should be first, reliability, then strength, elongation and cost. Most trouble comes when we insist on using chain under conditions of dynamic loading, that is, where shock and fatigue resisting properties are brought into play. The tests for determining fatigue and shock resisting qualities are yet in the experimental stage. There is plenty of evidence that material which successfully stands static shock is not necessarily best under conditions of fatigue and shock.

The best practice in chain making has for 100 years called for a proof load, usually about one-half the breaking load, applied to the finished chain for the purpose of showing up possible defects in workmanship or material. The load carried by chains in operation usually is too variable to develop true fatigue conditions. The damage comes from a small number, perhaps only a few hundred, peak loads, accidental shocks due to slightly careless handling, sudden lifting or the slipping and readjustment of a sling.

In selection of chain, conditions of service should govern the choice of a factor of safety, but ordinarily it is wise to retain all the reserve shock strength which the manufacturing process allows. The much discussed question of annealing is a consideration. It is well known that annealing restores its original properties to cold worked or distorted metal. At the same time it destroys the increased strength due to that cold work. The greatest benefit from annealing lies in the fact that it automatically increases the factor of safety. If improperly carried out, it weakens the chain. In general, annealing is useful only after the chain has been distorted by an overload and to lower the work-

(*Concluded on page 965*)

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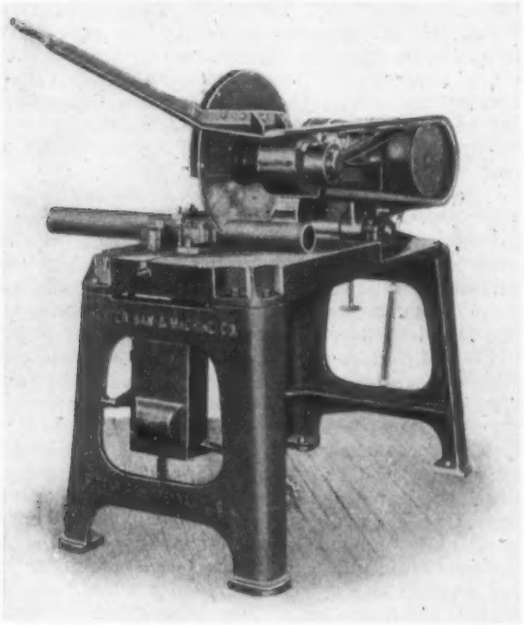

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In regard to operation of cranes, the importance of the craneman taking orders from only one man is vital. A frequent cause of accident is due to the common practice of the operator trying to handle more than one motion of the crane at a time. The operation of a crane should be in the hands of no more men than is necessary to operate it throughout the 24-hr. period. It has been found desirable sometimes to give crane operators a certain amount of experience with crane repair gangs. And further to insure safety of operation, it is practically necessary that frequent crane inspections be made by competent inspectors, and in large plants the inspection should be made in cooperation with the mechanic in charge of repairs. In smaller plants the inspections should preferably be made by someone outside of the department involved.

Chains for Cranes

A. V. De Forest, research engineer American Chain Co., presented a paper on "Safe Operation and Use of Crane Chains." He said that the desirable qualities should be first, reliability, then strength, elongation and cost. Most trouble comes when we insist on using chain under conditions of dynamic loading, that is, where shock and fatigue resisting properties are brought into play. The tests for determining fatigue and shock resisting qualities are yet in the experimental stage. There is plenty of evidence that material which successfully stands static shock is not necessarily best under conditions of fatigue and shock.

The best practice in chain making has for 100 years called for a proof load, usually about one-half the breaking load, applied to the finished chain for the purpose of showing up possible defects in workmanship or material. The load carried by chains in operation usually is too variable to develop true fatigue conditions. The damage comes from a small number, perhaps only a few hundred, peak loads, accidental shocks due to slightly careless handling, sudden lifting or the slipping and readjustment of a sling.

In selection of chain, conditions of service should govern the choice of a factor of safety, but ordinarily it is wise to retain all the reserve shock strength which the manufacturing process allows. The much discussed question of annealing is a consideration. It is well known that annealing restores its original properties to cold worked or distorted metal. At the same time it destroys the increased strength due to that cold work. The greatest benefit from annealing lies in the fact that it automatically increases the factor of safety. If improperly carried out, it weakens the chain. In general, annealing is useful only after the chain has been distorted by an overload and to lower the work-

(*Concluded on page 965*)

Improved Heavy-Duty Face Grinder

An improved heavy-duty face grinder designated as the type 84 TS., and intended for grinding guide bars and other wide flat surfaces has been placed on the market by the Bridgeport Safety Emery Wheel Co., Bridgeport.

Heavy construction of the bed is a feature. The ways are of the flat type and large oil wells and rolls provide continuous lubrication. Adjustable gibs are provided on the front of the table and undersides of the ways for taking up wear. The rear way is adequately protected from the entrance of grit.

The grinding wheel is of the company's improved 32 in. sectional type, made up of 14 sections which are carried in a steel casting chuck with provision for moving the sections forward as they wear. The setting forward of the sections is simple, and it is claimed that the entire wheel may be used up with safety. The spindle is large and is equipped with two radial ball bearings and two thrust ball bearings. The power for the grinding wheel and table traverse is transmitted through a motor mounted above the spindle as shown, and driving the latter by means of silent chain. Provision is made for center adjustment. A separate motor is employed to drive the water pump. The machine is driven throughout by gearing, belts having been eliminated.

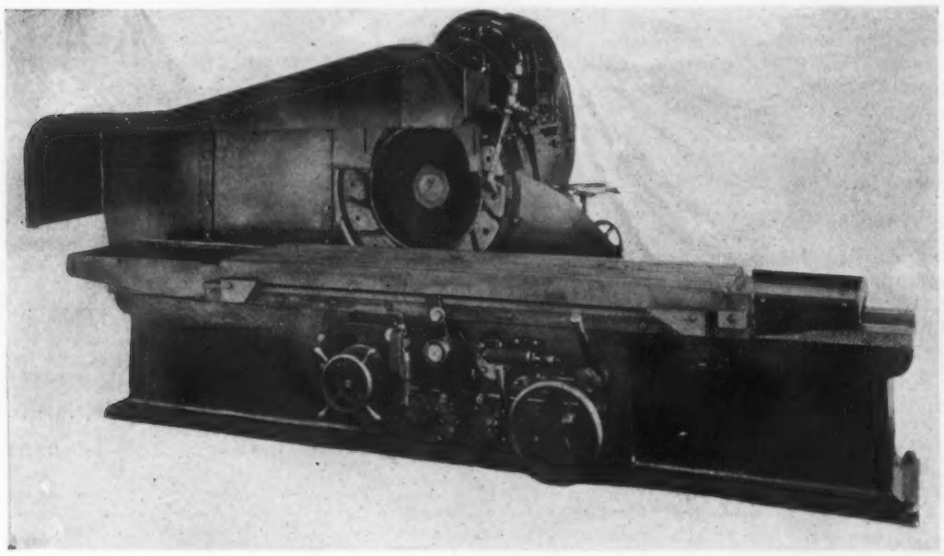
The machine may be controlled either from the front or back, the operator having conveniently at hand the means of stopping or starting the carriage, reversing or changing the speed of the carriage, feeding the grinding wheel up or back and controlling the flow of water. By means of a handwheel at the back, the grinding head may be swiveled to grind concave, the amount of swivel being indicated by a graduated arc.

A large range of automatic wheel feed, from 0.0005 in. to 0.030 in., is provided, and the feed may be set by half thousandths for any amount within its limits, the total movement of the wheel being 4 in. An automatic feed stop is also provided which may be set at any predetermined point, this feed taking place at the end of every stroke of the table. Either of the combination dogs on the front of the table may be replaced by a plain dog provided. This dog does not operate the cross feed, therefore the feed takes place only at every other pass.

Two speeds of table travel are always available and by reversing the position of two gears at the rear of the machine two additional speeds may be obtained. The table speeds obtained are 8.2 and 16.2 ft. per min. or 11.6 and 23.1 ft. per min. By means of extra gears various other speeds may be obtained.

Water is supplied to the work by a centrifugal pump, and the flow is controlled by a convenient lever. An adjustable water spreader is used and adequate provision has been made against flying spray. The water supply is carried partly in the bottom of the back extension and partly by a tank on the side.

The table is 20 in. wide and the maximum height of work accommodated is 22 in. The height from the floor to the top of the table is 29 in. The work table may be equipped with a vertical face magnetic chuck. The machine is regularly built with tables 66, 86, 110 and 140 in. long, longer tables being available if required.



Heavy-Duty Face Grinder for Guide Bars and Other Wide and Flat Surfaces. The machine may be controlled conveniently either from the front or back. Two table speeds are directly available and two additional speeds may be obtained by reversing two gears at the rear. By means of extra gears of different ratio, many other speeds may be obtained. The machine may be equipped with a vertical face magnetic chuck

Great Railroad Activity

For the week ended Sept. 20, the American Railway Association, Washington, reports 1,076,553 cars loaded, this being the highest figure, with four exceptions, in the history of American railroading. It exceeds the figure for the corresponding week of last year by 15,742 cars and is only 20,721 cars, or 1.8 per cent, below the highest figure for all time, which was in the week of Sept. 27, 1923, with 1,097,274 cars.

While total loadings from Jan. 1 to date this year fall considerably below the corresponding figures of last year, being 34,615,567 cars against 36,205,746 cars, they are with that one exception the highest ever recorded. Decreases in shipments of coal, coke and ore this year, compared with last, account for the entire difference between the two years. Excluding these three items, the total car loadings this year have exceeded by 144,222 cars the loading of the same commodities for the corresponding period last year and represent, therefore, a new high record in loading of general commodities.

To Create Factory Price Index

Another economic indicator is about to be given out by the National Industrial Conference Board, New York. This will show the general level of prices received by American manufacturers for their goods and make it possible to compare the trend of changes in these figures with the trend of wholesale and retail prices, already available in many lines. The program already is under way for the census years 1914, 1919, 1921 and 1923. The first report deals with prices of rubber goods, it being shown that the manufacturers' price of automobile and truck casings declined from $13.175 in 1914 to $10.083 in 1923 and of inner tubes during the same period from $2.542 to $1.311. Lower rubber prices based on the development of plantation rubber were largely responsible for this result.

DISTRIBUTION OF STEEL EXPORTS

Analysis of Destination of Seven Principal Items of Outgoing Tonnage for August and for Eight Months

SUPPLEMENTING the tables on pages 963 and 964 of this issue of THE IRON AGE, the distribution of exports of seven principal finished steel items appears on the tables here. This covers the outgoing tonnages of plates, rails, black and galvanized sheets, barbed wire, plain and galvanized wire and tin plate. The figures are for August of this year and last year and for the eight months ended Aug. 31 in each of those years.

Canada took more than 40 per cent of all the plate exports in August and almost 80 per cent of the amount sent out in the eight months. Still larger percentages was taken by Japan, this being nearly 23 per cent of the total. Cuba was the second largest customer, with Canada and Kwan Tung following in that order.

Brazil took almost 40 per cent of the barbed wire exported, with Argentine in second position and Cuba third. For the eight months, Brazil was the leader, with 34 per cent of the total, followed by Argentina, Cuba and Colombia as the next largest customers. In plain and galvanized wire the shipments were well distributed, no nation taking more than 19 per cent of the total. Canada, Mexico and Brazil were the three leaders. For the eight months Canada took about 22 per cent of all the shipments, with Japan, Argentine, Brazil and Mexico following in that order.

In tin plate, of which 6656 tons were shipped in August, Canada took almost 30 per cent and Japan about 24 per cent. The rest was distributed pretty generally, no nation having more than 7½ per cent. For the eight months, in which shipments amounted to 112,808 tons, Japan was the largest taker, with about 22 per cent, followed by China, with more than 20 per cent, and Canada with less than 15 per cent. British India, Argentina and Hong Kong were the largest of the other customers.

Exports from United States by Countries of Destination

(In Gross Tons)

	Plates				Galvanized Sheets				Black Steel Sheets			
	August		Eight Months Ended August		August		Eight Months Ended August		August		Eight Months Ended August	
	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924
Canada	7,155	2,332	71,563	47,879	1,878	1,381	25,616	12,893	3,026	2,245	38,998	26,292
Japan	156	102	612	285	249	223	2,870	10,230	1,080	7,070	19,907	65,655
Cuba	120	80	740	823	1,069	1,297	9,530	6,575	280	119	1,415	676
Philippine Islands	382	....	549	917	588	595	4,834	9,560	....	46	160	598
Mexico	43	14	407	483	496	479	4,332	3,661	....	....	....	....
Argentina	*84	*534	*899	*1,320	284	378	3,630	4,313	51	149	1,690	1,059
Chile	....	....	....	....	358	262	1,842	1,006	....	....	....	....
Colombia	....	....	....	....	9	375	2,561	2,299	....	....	....	....
Central America	....	....	....	....	399	516	2,700	3,096	....	....	....	....

	Steel Rails				Barbed Wire				Plain and Galvanized Wire			
	August		Eight Months Ended August		August		Eight Months Ended August		August		Eight Months Ended August	
	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924
Canada	4,541	257	31,700	13,481	105	20	4,521	619	993	467	10,292	6,445
Japan	4,972	1,294	49,753	31,663	....	....	....	....	741	20	14,208	3,790
Cuba	7,618	5,626	34,868	28,414	863	978	7,344	5,570	258	11	1,862	1,187
Philippine Islands	721	1,419	3,346	4,329	....	....	....	....	....	....	....	....
Mexico	113	281	2,684	7,606	732	438	2,779	2,538	521	437	2,592	2,565
Chile	....	1,721	2,116	8,610	....	....	....	....	370	....	3,894	....
Brazil	1,929	202	2,733	8,348	722	3,403	7,025	20,867	484	382	6,073	2,800
Colombia	27	1,885	2,136	7,906	229	613	3,297	4,516	....	....	....	....
Argentina	....	....	834	....	....	1,406	6,410	7,115	200	257	9,463	2,527
Chosen	250	....	2,004	36	....	....	....	....	....	....	....	....
Honduras	10	....	7,342	2,627	....	....	....	....	....	....	....	....
Kwan Tung	....	....	11,143	10,985	....	....	....	....	....	....	....	....
Australia	....	....	....	....	363	165	1,497	1,960	181	113	4,662	1,602
British S. Africa	....	....	....	....	511	268	4,541	3,740	....	....	....	....
West Indies	....	....	....	....	....	....	6,153	....	....	....	....	....
Great Britain	....	....	....	....	....	....	....	....	267	10	1,544	1,169

*All South America.

Tin Plate:	August		Eight Month Ended August	
	1923	1924	1923	1924
Canada	2,314	1,910	19,412	16,420
Japan	1,891	1,526	18,034	25,100
Cuba	91	426	3,288	3,584
Mexico	153	496	1,412	2,751
Argentina	748	281	3,833	6,748
Chile	74	291	1,264	1,757
Uruguay	267	56	2,223	346
China	36	50	5,833	22,984
British India	....	245	2,931	9,304
Hong Kong	78	174	2,022	6,325
Italy	....	244	2,266	3,939

were sent to Canada last year, with more than 80 per cent of the August shipments and more than 85 per cent of the eight months' shipments. Aside from what Canada took, the distribution of plates was well scattered.

Galvanized sheets were well distributed, no country taking as much as 20 per cent of the total. Canada and Cuba were the two largest customers. For the eight months, Canada and Japan were the two largest customers, with the Philippines and Cuba next in order.

Japan took more than 63 per cent of the black steel sheets shipped in August and almost two-thirds of the tonnage shipped in the eight months. Canada was the largest of the other customers under both headings, but with only about one-third the amount taken by Japan.

Of the steel rails shipped in August, amounting to 18,006 tons, Cuba took the largest amount, with about 31 per cent. Colombia, Chile, Philippines and Japan followed in that order, taking from 10 to 7 per cent respectively. For the eight months, the largest tonnage

New Purchaser for Erie Brake Shoe & Foundry Co. Plant

The Jarecki Mfg. Co., large manufacturer of oil well pipe supplies, Erie, Pa., acquired the plant of the Erie Brake Shoe & Foundry Co. on Sept. 29, when it was offered for sale by the War Department, the purchase price being $270,000. This sale ends the negotiations between the War Department and several purchasers. The latest purchaser to fail to carry out the agreement was the Ashworth-Odell Worsted Mills, Salamanca, N. Y. The Jarecki company operates two plants in Erie and one in Clarendon, Pa. Present plan of the new owner is to consolidate its Erie plants into the brake shoe plant within six months. The new acquisition consists of three main buildings, covering a total of 365,000 sq. ft. of floor space.

The Bethlehem Steel Corporation has awarded the contract to the Morgan Engineering Co., Alliance, Ohio, for an 18-in. structural mill for its Johnstown, Pa., plant, and a 24-in. structural mill for its Lackawanna plant at Buffalo.

Birmingham Meeting of American Institute of Mining and Metallurgical Engineers

BIRMINGHAM, ALA., Oct. 7.—Programs have been printed, together with a handsome booklet descriptive of the mining and manufacturing properties of the Birmingham district, giving many pictures of plants. for the one hundred and thirtieth meeting of the American Institute of Mining and Metallurgical Engineers, in Birmingham, Oct. 13, 14 and 15. An attendance of 250 is expected and several distinguished visitors from abroad are to be here, including Sir William Ellis, president of the Iron and Steel Institute (England); Charles McCrae, Minister of Mines for the Dominion of Canada; J. an McLeigh, Director of Mines of Canada, and J. V. W. Reynders, New York.

In addition to automobile rides about the city and the immediate district, the visitors will go on two excursions on special trains into the industrial section of the Birmingham district.

Technical papers to be discussed include: "Coal Washing Practices in Alabama," Henry S. Geismer, consulting engineer Keiser-Geismer Engineering Co.; "By-Product Coking in Alabama," Frank W. Miller, manager of by-product plant of the Sloss-Sheffield Steel & Iron Co.; "Alabama Coal Mining Practices," Milton H. Fies, vice-president DeBardeleben Coal Corporation; "Blast Furnace Practices in Alabama," Howard E. Mussy, superintendent of furnaces, Woodward Iron Co.; "The Alabama Steel Industry" (informal talk), James Bowron, chairman of board, Gulf States Steel Co.; "Production of Ferrophosphorus in the Electric Furnace," Theodore Swann, president Federal Phosphorus Co.; "Manufacture of Cast Iron Pipe in the South," Richard Moldenke, consulting metallurgist, Watchung, N. J.; "Effect of Sulphur in Blast Furnace Practice," T. L. Joseph, acting superintendent mining experiment station, Minneapolis, Minn.; "Geology of Birmingham Iron Ores," Dr. E. F. Burchard, economic geologist, United States Geological Survey, Washington, D. C.; "Iron Ore Mining Methods in Birmingham District," W. R. Crane, superintendent Southern Experiment Station, Birmingham, United States Bureau of Mines; "Geology and Utilization of Tennessee Phosphate Rock," R. W. Smith, assistant geologist; "Roof Supports in Red Ore Mines of Birmingham," W. R. Crane.

COMING MEETINGS

October

American Institute of Mining and Metallurgical Engineers. Oct. 13 to 15. Annual inspection trip and meeting at Birmingham. Frederick F. Sharpless, 29 West Thirty-ninth Street, New York, secretary.

American Foundrymen's Association. Oct. 13 to 17. Annual convention, Milwaukee. C. E. Hoyt, 140 South Dearborn Street, Chicago, secretary.

American Gear Manufacturers Association. Oct. 16 to 18. Semi-annual fall meeting, Briarcliff Lodge, Briarcliff Manor, N. Y. T. W. Owen, 2443 Prospect Avenue, Cleveland, secretary.

American Society of Mechanical Engineers. Week of Oct. 20. Management week, New York City. Calvin W. Rice, 29 West Thirty-ninth Street, New York, secretary.

Society of Automotive Engineers. Oct. 22 to 24. Annual national production meeting at General Motors Building, Detroit. For information, L. Clayton Hill, 29 West Thirty-ninth Street, New York, assistant general manager.

Electric Power Club. Oct. 20 to 23. Fall meeting, Hotel Greenbrier, White Sulphur Springs, W. Va. Headquarters of association, B. F. Keith Building, Cleveland.

American Iron and Steel Institute. Friday, Oct. 24. General meeting and banquet at the Commodore Hotel, New York. E. A. S. Clarke, 40 Rector Street, New York, secretary.

Motor Truck Industries. Oct. 21 to 27. First national motor transportation show. American Exposition Palace on Lake Shore Drive, Chicago. Capitol Building, 120 Madison Avenue, Detroit, headquarters.

American Welding Society. Oct. 30 and 31. Fall meeting at Hotel Winton, Cleveland. Miss M. M. Kelly, 33 West Thirty-ninth Street, New York, secretary.

November

American Institute of Steel Construction. Nov. 13, 14, 15. Annual convention, French Lick Springs, French Lick, Ind. Charles F. Abbott, 350 Madison Avenue, New York, executive director.

American Construction Council Discusses Building Problems

The dominant note in the sessions of the American Construction Council, held in New York, Oct. 2 and 3, was the need for national teamwork in industry. Franklin D. Roosevelt, president of the council, reviewing the activities of the organization during the last year, stated that the council's original plan of publishing a regular bulletin outlining the trend of the building industry was abandoned in favor of a subsequent plan, whereby the public is reached through the medium of trade papers and newspapers, with which the council communicates directly. The chief aim of the council is to lower the peaks and prevent the depressions in building activities by keeping banks, contractors, builders and property owners informed on the trend of the industry.

James Hartness, former governor of Vermont and successor to Secretary Herbert Hoover as president of the American Engineering Council, made a plea for cooperation in industry between labor and employers, emphasizing the gain to labor in less hours and better pay, the gain to employers in better returns and the gain to all in greater production.

Speakers representing the several component groups of the council contributed to the discussion of fundamental relations in engineering construction as bearing upon better building, and the necessity for adequate supervision of apprentice activities.

British Engineers' Association Directory

In a publication of 318 pages appears the year book of the British Engineers' Association, 32 Victoria Street, Westminster, London, S. W. 1. The members are listed alphabetically, together with considerable information regarding the business of each member company and its connections. Next appears a list of the members who participated in the British Empire Exhibition at Wembley. Much of the remainder of the book is taken up by advertisements of members and others. A copy of the directory will be sent to any engineering plant desiring it.

Steel reinforcement for roads forms the subject of an investigation being conducted by the Advisory Board on Highway Research of the National Research Council, Washington. An intensive study is to be made showing the influence of the reinforcement on the resistance of the slab to traffic, subgrade and climatic conditions: the conditions under which steel reinforcement is especially beneficial to concrete slabs; the effect of slab design on the efficiency of reinforcement; and finally the relative cost of plain and of reinforced concrete roads, considering both the initial investment and the annual maintenance and renewal charges.

The Fairmount Foundry, Inc., Third and Westmoreland Streets, Philadelphia, has taken over the foundry of the Bernstein Mfg. Co. at that address. The company specializes in machine molded gray iron castings, also semi-steel castings of any weight. It also operates a foundry at Hamburg, Pa., which produces small and light gray iron castings.

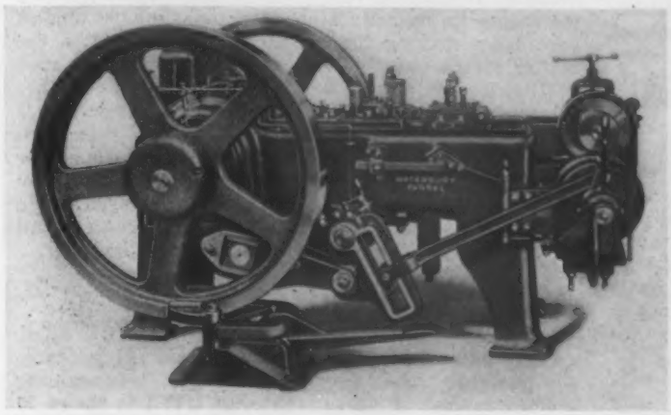
DOUBLE-STROKE CRANK HEADERS

Roll Feed, Heading Gate Construction, Lubricating System and Safety Devices Are Features

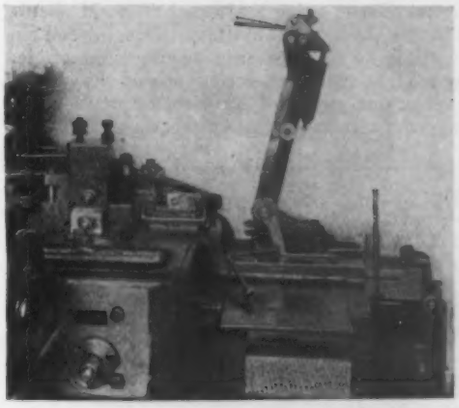
The Waterbury Farrel Foundry & Machine Co., Waterbury, Conn., has brought out an improved design of double-stroke crank heading machines of both the open die and solid die types. Five sizes of each machine are available, for heading wire from 3/16 to ⅝ in. in diameter.

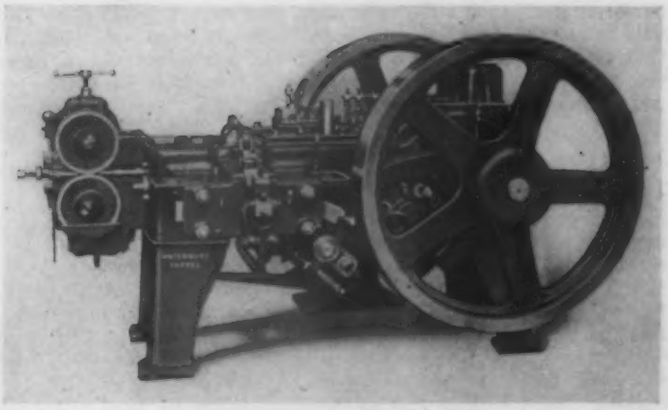
In the open die machine the wire is headed while being held in a hole formed by mating semi-circular grooves in two dies. Usually the dies are of square cross-section and are held together during heading by with a safety device which prevents a short feed and provides an immediate and firm grip on the wire regardless of variation in its diameter. The feed movement is adjustable to a fine degree, and the exact amount of feed is retained automatically when set, preventing reverse movement of the feed rolls.

The construction of the heading gate used on both types of the machine is also a feature. A special connection between the crankshaft and heading gate is claimed to provide a means for self-alinement that is better than heretofore employed, friction and wear being reduced to a minimum. There is also an adjustable wedge incorporated in the gate whereby the latter is alined automatically in its ways. The adjustable wedge also provides for adjusting the distance



The Open-Die Header Is Shown at the Left. The arrangement of die cap and die spreader device is shown above





The Solid Die Header Is Shown at the Lower Right, Which Is a View from the Cut-Off Side of the Machine. The arrangement of the improved "fiddle bow" which is claimed to be especially efficient because of the high speeds at which the machines operate, may be noted from the lower left-hand illustration

heavy pressure. It is used generally to head work that is relatively long as compared with the limitations of a solid die header, and also work on which the parting line produced by the dies is not objectionable. In the solid die header, the wire is headed while located in a recess or hole in a solid piece of hardened steel, usually round in cross-section. This type of machine is employed for making a variety of comparatively short work; and for making work of accurate diameter and high quality finish, within the limited capacity of the machine for length.

A feature of both the open and solid die machines is the oscillating spring compensator device, which is located on a rocker shaft beneath the frame, and is intended to eliminate the necessity of adjusting the up-and-down position of the vertical punch holder from underneath the machine. This is now done by the simple adjustment of two stop screws above the punch-holder slide.

The roll feed employed is a feature also emphasized. The same design is used on both styles of headers, but on the open die machine an auxiliary device is incorporated to prevent engagement of the feed except at the proper time. The roll feed mechanism is equipped between the punches and dies, and permits of freeing the header should it become stalled on centers.

The machines are equipped with devices for safeguarding against breakage, thereby avoiding interrupted production. The lubricating system is noteworthy. Oil is fed from a reservoir to sight-feed oilers and petcocks to important bearing surfaces, the lubrication of inaccesible bearings being said to have been given special attention.

On the open-die header the cut-off toggle gripping mechanism and the safety breaker device are new features. The cut-off and toggle gripping mechanism is cam actuated and is employed to close the dies and advance them to shear the wire. The toggle mechanism is inclosed in a frame and lubricated constantly with a flood of oil. The toggles are adjustable independently to produce the desired holding pressure. The safety breaker incorporated in the cut-off connection functions when obstructions to the movement of the dies occur, preventing damage. The breaker bar is long and of comparatively small cross-sectional area. When the safety functions small pieces are sheared off. The bar may be replaced conveniently.

The cut-off on the solid die header is of improved

construction and has a safety device located in the connection. It operates a slide or cut-off bar to which a device called the fiddle bow, or cut-off carrier is attached. The latter supports the blank in the cut-off knife until it is engaged by the coning punch. It is positive in its action, being lifted up over the wire blank on its return movement, to clear the advancing coning punch. The construction employed is intended to permit the device to operate at high speeds.

The solid die header is also equipped with a knock-out device incorporating improved features. A relief attachment for use in heading blanks having a shoulder or other projection under the head is available as special equipment for the solid-die heading machine.

ADDITIONS AT CHICAGO

Improvement Plans of Youngstown Sheet & Tube Co.—Talk of Mergers Renewed

YOUNGSTOWN, Oct. 7.—Independents in this district are daily occupied with the problem of strengthening their competitive position in the trade as a result of the recently developed pricing situation. Further mergers are considered the most likely means of overcoming the advantage gained by the Steel Corporation through abandonment of Pittsburgh plus.

In this district the Youngstown Sheet & Tube Co. enjoys some advantage over other independent competitors by reason of its producing capacity in the Chicago district. Consideration is now being accorded proposed extensions to the company's finishing capacity at Chicago, and the abandonment of the Pittsburgh base will expedite the construction of rolling mills which have been under contemplation since the Sheet & Tube company first acquired its properties in the Chicago area.

President James A. Campbell states that a rod mill, with wire and nail equipment, sheet and tin plate mills, will likely be added at Chicago. It is unlikely, however, that much building, except preliminary work, will be carried forward next year. Officials point out that the proposed expansion will be in pursuance of the company's original program with respect to the rounding out of the Chicago properties.

Proposed Wire Department

The proposed wire department will have an approoximate capacity of 10,000 tons of wire products per month. Part of the equipment needed for the tin plate capacity is already in the company's possession. The creation of tin mills at Chicago will mark the entrance of the Sheet & Tube company into the manufacture of tin plate. It is quite likely that strip mills will be built at the Chicago plant later on.

Completion of the program of rolling mill expansions will involve the establishment of additional steel-making facilities and the addition of three or four open-hearth furnaces to the present equipment. An auxiliary mill to the present blooming mill in the company's steel department at Chicago will also be necessary. For the immediate future, the company's Bessemer department will be sufficient for its Bessemer steel requirements.

The only finishing mills of the Sheet & Tube company at the present time in the Chicago district are tube units at Evanston and Indiana Harbor. There is no intention at present to add capacity for production of the heavier steel products, such as plates and shapes. At its Brier Hill works, the Sheet & Tube company has two modern plate mills which were built by the Brier Hill Steel Co.

With capacity at Chicago for manufacture of the same rolled products as at Youngstown, the company feels it will be able to retain its Western selling territories without serious loss.

Republic Plans

The Republic Iron & Steel Co. is bringing to completion an improvement program covering two years which has brought its properties in the Youngstown district to a high degree of efficiency. A 22 1-2-19-in. Morgan continuous mill at its Bessemer plant is ready for operation. This is a combination sheet bar, billet and skelp mill that will replace three older-type units which have been discarded. To operate this unit, a uniflow steam engine has been installed by the Nordberg Engineering Co., Milwaukee, constituting one of the largest steam mill drives in the country.

Another installation is an 800-ton mixer for handling molten iron, located between the blast furnaces and steel plant.

The initial step in the improvement program consisted in an addition to the by-product coke oven plant, increasing its capacity from 1800 tons to 2800 tons of coke daily, making the company self-sustained in the matter of coke supply for its Haselton blast furnaces.

District iron and steel interests predict further mergers as an outcome of the present situation. It is contended that steel makers generally are disinclined to proceed with new building projects, and the other alternative is to join with producers having plants in separated localities. It is considered unlikely, though, that much headway will be made in this respect until after the result of the national election in November.

Angular Transmission Device

An angular transmission device designed to transmit power between two shaft ends while maintaining a uniform angular velocity ratio of 1 to 1 is shown in the accompanying illustration.

The device, which is being marketed by G. M. Bartlett, 2533 College Avenue, Indianapolis, is applicable to any shaft angle up to something over a right angle. The bearings may be mounted so that one of the shafts can make an angular sweep of 180 deg. or more without affecting the relative velocity between the two shafts. Noiselessness, compactness and durability are features emphasized. The flexible construction is said to adapt the device to mal-alined shafts without creating additional pressure on the bearings or on its own working parts. The device is intended also to permit the transmission of motion between two parallel shafts, the center lines of which are some distance apart.

Device for Transmitting Power Between Two Shaft Ends While Maintaining Uniform Angular Ratio of 1 to 1. It is applicable to any shaft angle up to something over a right angle

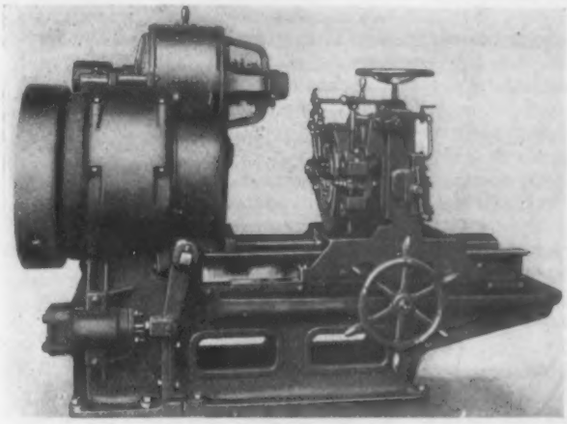
As a right angle drive, the device may be attached directly to the shaft ends. They are usually furnished without bearings or oil cases, but when used as right angle drives for line shafting, special hangers, self-alining ball-bearing pillow blocks and oil cases may be provided. It is claimed that the efficiency of the drive is high. Ball thrust bearings are desirable, although not absolutely essential. There is said to be a slight end thrust.

The device is said to be applicable where miter gears would be prohibitive because of imperfect shaft alinement, and to be of advantage as a substitute for mule pulleys. The drives are available in a series of standard sizes, each covering a range of shaft diameters.

Improves Pipe-Threading Machine

The United Engineering & Foundry Co., Pittsburgh, has placed on the market the pipe threading machine illustrated, which has been improved in several details. In the new machine all gears are entirely inclosed and run in oil; bearings are lubricated by the splash system; the grips are carried in a steel grip holder and operated by an air cylinder through cone and lever. Entering guides, bolted to the face of the chuck, lead the pipe into the barrel, making it unnecessary to stop the machine.

The carriage is hand-operated and mounted on wheels equipped with roller bearings. The wheels

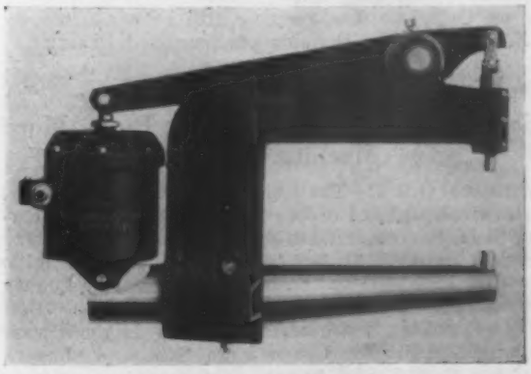


Inclosed Gears Running in Oil, and Splash Lubrication of Bearings Are Among the Improved Features

travel on a steel plate and both the wheels and track are amply protected from the chips and cuttings made by the dies. The operating racks are on the outside as shown. These features are intended to permit the carriage to be moved with the minimum of effort. The dies are arranged so they can float both horizontally and vertically. A pump driven from the machine furnishes cutting compound to the dies through a flexible tube.

Riveter for Light Work

The Hanna Engineering Works, 1765 Elston Avenue, Chicago, has recently placed on the market a new design of riveting machine for light work, the machine being particularly adapted for riveting a sheet steel



Light Riveter, Capacity of Which Is for ⅝ In. Hot or ¼ In. Cold Rivets

outer shell to the firing door edge of a domestic heating furnace and for similar work.

The illustration shows a machine with a reach of 24 in. and a gap of 13 in. The cylinder diameter is 9¼ in., exerting 10 tons on the dies at 100 lb. per sq. in. air pressure. The piston stroke is 7 9-16 in., and the die stroke is 1⅞ in. Total weight of machine is 1180 lb. The lower or dead stake, which is forged alloy steel, heat treated, is 6½ in. in diameter at the throat with a simple taper to 4 in. diameter at end.

The capacity of the machine is ⅝ in. hot or ¼ in. cold rivets. Foot brackets are cast on the frame for mounting the riveter in a stationary position with reach vertical, dies horizontal, cylinder down.

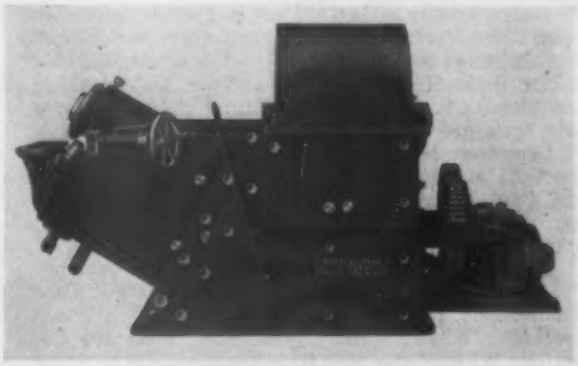
Refining of Precious Metals

Census Bureau reports from 75 establishments showed the 1923 reducing and refining of gold, silver and platinum to have yielded products valued at $69,681,897, compared with $45,974,226 from 77 establishments in 1921. Contrary to nearly all manufacturing experience, the great bulk of this product necessarily was in the cost of materials, for the value added by manufacture was less than 10 per cent of the total value of the product in 1923 and less than 11 per cent in 1921, the figures being respectively $6,711,884 and $4,918,475. Wage earners increased from 785 to 896 and their wages from $1,130,572 to $1,351,340. The horsepower used in 1923 was 4525, while the coal consumed amounted to 6135 net tons.

Inverted Rotary Bevel Shear

A special inverted type of rotary bevel shear intended to save the extra labor and cost of turning the sheets after the shearing is done and before they can be passed through the rolls is illustrated herewith.

The capacity of the machine, which is a development of the Marshalltown Mfg. Co., Marshalltown, Iowa, and is designated as the No. 98, is for beveling material 1 in. and lighter. Where it is necessary to bevel from both sides, it may be accomplished with the



Inverted Rotary Bevel Shear for Beveling Material 1 In. and Lighter

shear illustrated in conjunction with a standard bevel shear without turning the plates.

The size of the cutters is 2 x 12 in. They are of special tool steel and are knurled to feed the material. The depth of the throat is 4 in. The speed of the machine is 200 r.p.m. and material is cut at the rate of 5 ft. per min. The distance from the floor to the cutters is 34 in.

The machine may be arranged for either belt or motor drive, a 10-hp. 1200-r.p.m. motor being employed for the latter. A friction clutch pulley is provided with the belt-driven shears and a friction clutch gear with the motor driven machine, which permits of stopping the shear with the motor running. The floor space required for the machine is 4 ft. 6 in. by 8 ft. 10 in. The weight of the belt driven shears is 9600 lb. net, and of the motor driven machine, 9800 lb. net.

The Owen's Universal Joint & Gear Co., Lake Worth, Fla., incorporated with $500,000 capital stock, will build a plant for the manufacture of universal joints. It is interested in obtaining prices on lathes, shapers and milling machines. No contracts have yet been placed. Truman A. Horton is secretary.

PRODUCING MEN OF VISION

Engineering School Curricula Designed to Make the Thought of Service an Impelling Force

Engineering schools of today aim to produce engineers who have courage, vision in social and economic problems and to whom the thought of service is an impelling force, declares Dr. Arthur M. Greene, Jr., dean of the Princeton University Engineering School, in a statement of engineering practice and ideals made public by the American Engineering Council. Not only must the engineer be well grounded in fundamentals of science and a particular branch of engineering, he says, but he must be able to think straight.

"The work of the engineering school," Dean Greene explains, "is a study of past investigations into the action of nature, the application of this study of the borderland of the sciences for the purpose of improving and perfecting present equipment and practice. To accomplish this the engineering student must be trained along definite lines of reading, imagination, thinking, searching, anticipation, acting and expression.

"The spoken or written word is too bulky or inexact for the engineer in many cases and so to describe form he resorts to drawing as a language. This convention is not only a training for expression and reading but for the development of the imagination, so that the engineer may picture certain features of a project before it has any real form. In this study he learns also how to transmit his own ideas to another or to comprehend the structures which another has devised. He can visualize it and intelligently criticize it before the first stroke of work has been done on the project.

"As a tool by which to compute costs, predict properties or actions and to conserve lost energy of numerous trials and misfits, this study has as great a value as any of the engineering curriculum."

Dean Greene stresses the important rôle that social and economic subjects play in the present-day curricula of engineering schools. "Courses in American government, the development of civilization, civics, elements of economics, social psychology, business methods, accounting, labor problems, finance and banking," he says, "are not only possible electives in many engineering schools, some of them are required. The feeling of many engineering educators is that the real problem before their schools is to train more men of broad vision and fewer technicians, leaving this latter work to the great number of vocational schools throughout the world.

"The engineer has recognized his obligations as a citizen to his community, his state and the nation. As a citizen of the present, his training and experience fits him to aid in any of these communities in many of the questions before them."

ENGINEERS ELECT OFFICERS

Annual Meeting of A. S. M. E. and Power Exposition to Be Held Simultaneously

Dr. William F. Durand, Stanford University, California, has been elected president for 1925 of the American Society of Mechanical Engineers, succeeding F. R. Low. Prof. Robert Angus, University of Toronto, Toronto, Canada; S. F. Jeter, chief engineer, Hartford Steam Boiler Inspection & Insurance Co., Hartford, and Thomas L. Wilkinson, consulting engineer, Davenport, Iowa, are vice-presidents. The managers are John F. Lawrence, New York Edison Co., New York; Edward A. Muller, King Machine Tool Co., Cincinnati, and Paul Wright, Paul Wright & Co., Birmingham, Ala. W. H. Wiley, president John Wiley & Sons, Inc., is treasurer.

Delegates to the American Engineering Council are: Dr. W. F. Durand, F. R. Low, New York; W. P. Hunt, Moline, Ill.; I. E. Moultrop, Boston; E. N. Trump, Syracuse; W. W. Vareny, Baltimore, Md.; Ira Dye, Seattle; W. S. Finlay, Jr., New York, and D. E. Foster, Tulsa, Okla.

Annual Meeting to Be Held in December

High spots in the technical program of the 45th annual meeting of the American Society of Mechanical Engineers include joint sessions of the machine-shop practice division with the special research committee on the cutting and forming of metals, the special research committee on lubrication, and the management division.

The meeting will be held in the Engineering Societies Building, New York, Dec. 1 to 4, and as in the past two years will be held coincident with the National Exposition of Power and Mechanical Engineering.

There will be a session on oil burning, sponsored by the power and fuels division, and one on the handling and storing of oil, sponsored by the materials handling division.

A paper on the Zoelly turbo-locomotive by Dr. Henry Zoelly of Switzerland, and a paper on the petroleum situation in the United States, by Dr. Julian D. Sears, administrative geologist, United States Geological Survey, are other features of the program.

The National Exposition of Power and Mechanical Engineering will be held in the Grand Central Palace, New York. Representation by manufacturers of large turbines and hydraulic power plant equipment will be an added feature, and an effort is being made to bring manufacturers of motor-driven machine tools into the show. Educational lectures will be given in conjunction with the show and a series of educational and historical exhibits is being arranged.

Elimination of Two Sizes of Pipe Is Recommended

WASHINGTON, Oct. 7.—Elimination of two sizes of plain round conductor pipe out of eight made at present and of three of the eight sizes of eaves trough as well as one size of conductor pipe elbow, is recommended by the simplification committee of the eaves trough and conductor pipe industry which has been cooperating with the Division of Simplified Practice, Department of Commerce. The proposed elimination would do away with the 2½ and 3½-in. sizes of plain conductor pipe as well as the 3, 3½ and 4½-in. sizes of eaves trough and the No. 0 angle of conductor pipe elbows. The recommendations will be placed before a conference of makers, distributors and users in connection with joint sessions of the American Hardware Manufacturers' Association and the National Hardware Association of the United States in Atlantic City on Oct. 14. The meeting will be conducted by A. E. Foote of the Division of Simplified Practice.

Chicago Board of Education Buys More Machine Tools

CHICAGO, Oct. 7.—The Chicago Board of Education, which recently placed orders for $75,000 worth of machine tools, has made additional purchases calling for an equal outlay. Orders placed include 11 engine lathes for Senn High School, 4 lathes for Schurz High School, 4 milling machines for Crane High School, 4 milling machines for Tilden High School, 4 3-spindle drills for Crane High School, 4 shapers for Crane High School, besides considerable miscellaneous equipment.

The Illinois Steel Co. is remodeling a billet mill at Joliet, Ill., for the production of slabs to be used in the new plant of the Gary Tube Co. at Gary, Ind. Part of the pipe manufactured at Gary will be Bessemer steel, and the mill at Joliet will supply slabs of that analysis, as the steel-making capacity of the Illinois Steel Co. at that location is confined to Bessemer converters.

NEW SELLING PLANS

Still Some Confusion Following Abolition of Pittsburgh Plus

Considerable Doubt as to Sheets and Tin Plate—Jones & Laughlin Steel Corporation Will Use Inland Waterways More Extensively

PITTSBURGH, Oct. 6.—Some wrinkles still remain to be ironed out to give laundry-like smoothness to the new order of affairs in the steel market incident to the abolition of the Pittsburgh plus method of quoting. As indicated in THE IRON AGE last week, the change has been pretty well accomplished so far as pipe and wire products are concerned, but in sheet and tin plate, the other lines on which buyers paid the freight from Pittsburgh rather commonly, there still is some confusion as to how the independent manufacturers with plants that are in neither of the basing areas that have been established by the American Sheet & Tin Plate Co. will meet the situation. It is possible the matter will be considered at the monthly meeting of the National Association of Sheet and Tin Plate Manufacturers, which will be held tomorrow at the William Penn Hotel in this city.

Makers of cold-rolled strips are still debating as to whether they can meet the base prices announced by the American Steel & Wire Co. for Cleveland and Worcester, Mass., on that product. Local makers of cold-finished steel bars appear to have recovered from the shock of the prices named for Cleveland and Worcester on that line and so far as Cleveland is concerned, they now are showing a disposition to equalize the freight from their own mills to Cleveland with Cleveland district mills. It is emphasized, however, that the equalizing of freight with Newburgh, Ohio, gives them the additional 2c. to 6c. per 100 lb., the freight from Newburgh into the city of Cleveland proper. There are conflicting reports as to the range of sizes of cold-finished bars produced by the American Steel & Wire Co. in its Cleveland district mills, one that it makes the full range and another that it does not make shafting larger than 3 in. in diameter. If the latter statement is the correct one, then there is a possibility that Cleveland district producers will be obliged to pay Pittsburgh district mill prices plus the freight on some of their purchases.

Still Selling F.O.B. Pittsburgh

To a large extent, sheet prices still are on an f.o.b. Pittsburgh basis. Western reports indicate that the Inland Steel Co. is quoting the same delivered prices in Chicago as the American Sheet & Tin Plate Co. and it is reported that the Mansfield Sheet & Tin Plate Co. is quoting f.o.b. mill, with freight added to destination, but no information yet is available as to prices at that point.

The Carnegie Steel Co. has made no change in prices on its principal products, but this company for a long time has been quoting delivered prices and its principal plants being located within the area having a common rate of freight to distant points, it is well within its rights in continuing to quote f.o.b. Pittsburgh. There is no doubt, however, that it is recognizing the competition in delivered prices to some extent at points outside the zone in which rates are more favorable to Pittsburgh than to outside manufacturers. No official announcement yet has been made by the company as to its procedure in the matter.

It is interesting to note that manufacturers of poultry netting, who formerly bought wire on a Pittsburgh f.o.b. price base and made their selling prices f.o.b. Pittsburgh, have gone on to an f.o.b. factory base. Jobbers in the Pittsburgh area formerly received a freight allowance on account of the basing method, but under the new order, they must pay freight from factory. They get their supplies a little cheaper than formerly, however, because of a reduction in the factory base prices, made possible through the price reductions in the raw material.

Will Ship More by Water

It is evidently the intention of the Jones & Laughlin Steel Corporation, Pittsburgh, to first seek the solution of the problem of finding an outlet for its products at distant points created by the abolition of the Pittsburgh plus method of quoting through more intensive use of the inland waterways. It has been found that using the rivers in conjunction with the Western and Southern railroads has made possible shipments to greater distances at less cost than by all rail shipments. A decision by the Supreme Court of Tennessee recently cleared the title to a site at Memphis on which the company proposes to build a private railroad and river barge terminal and warehouse. Already the engineers are on the spot making surveys and shaping plans for the clearance of the site and construction of the terminal is expected to begin in the next few weeks.

Superior Gas Engine Co. Buys German and Philadelphia Companies

CINCINNATI, Oct. 7.—The Superior Gas Engine Co., Springfield, Ohio, has purchased the Deutz Motorenfabrik Co., Cologne, Germany, and the Otto Engine Works, Philadelphia, and plans the enlargement of the Springfield plant to increase production of gas engines in this country. The works at Cologne and Philadelphia will continue in operation. The deal, which involves several million dollars, was completed by President P. J. Shouvlin of the Superior company last Saturday. With the addition of the two plants, the Superior company will become the largest manufacturer of gas engines in the world. The Springfield plant of the company employs 600 men, the Philadelphia plant 400 and the two plants of the Deutz Motorenfabrik Co. at Cologne and Oberoser, Germany, about 5000.

Cyclone Fence Co. Purchased by the United States Steel Corporation

The Cyclone Fence Co., Waukegan, Ill., with plants in that city, Cleveland, Fort Worth, Tex., and Newark, N. J., has been purchased by the United States Steel Corporation. J. P. Arthur, president; C. F. Arthur, vice-president, and J. H. Broad, secretary, have resigned, and new officers have been elected as follows: W. P. Palmer, president; Frank Baackes, vice-president; A. S. Allen, secretary; E. H. Harper, treasurer and assistant secretary, and John W. Meaker, general manager. The company will continue to be operated under the name of Cyclone Fence Co. as a separate subsidiary of Steel Corporation.

German Scrap Metal Handling Concern

BERLIN, GERMANY, Sept. 17.—The Hugo Stinnes Co., Hamburg, has displayed a large activity in the scrap metal trade lately. Besides handling most of the scrap of the Stinnes and other associated concerns the firm has established a large number of branches and attained a large turnover. Now the company has taken an interest in the Metallwerk Hamburg. This firm, reorganized, takes over the entire scrap metal trade of the Stinnes company. It is not only well known as a manufacturer of lead but also is producing metals for railroads, a line which also has been a specialty of the Stinnes, as well as the Rhein-Elbe, concern. The Stinnes company has also recently acquired the Elberfeld Copperworks, which include lead rolling works, so that probably the entire lead scrap that becomes available in the Stinnes organization will be worked up at Hamburg and Elberfeld.

European Markets Show No Improvement

English Pig Iron Weak and Prices Again Lower—Continent Depressed—German, Belgian and French Prices Down

(By Cable)

LONDON, ENGLAND, Oct. 7.

THERE is no improvement in the Cleveland pig iron market. Prices have declined further. Belgian pig iron is underselling British in Scotland and on the Continent. Not much fresh business has developed in hematite and makers are handicapped by large stocks. Pease & Partners, Ltd., Darlington, are arranging to blow out two furnaces at the Tees Ironworks, reducing the active furnaces on the North East Coast to 40, compared with a normal of 70.

Foreign ore is stagnant. Best Bilbao Rubio is quoted at 21s. 6d. ($4.79) ex-ship Tees.

Finished iron and steel is quiet and export demand is slack, particularly to South Africa and Australia. There is a slight improvement in the home trade but the position is very unsatisfactory. The average rate of working is 50 per cent and there is a weak undertone to prices. Baldwin's, Ltd., has given a month's notice to 1500 workers at the Port Talbot Steel Co. works.

Sheets and Tin Plate

Tin plate is a rather quiet market. Some works are running on short orders. Prices are fairly steady on the schedule basis. India and the Far East are the main export buyers. Other markets are listless. A fair business is passing in wasters, C W 20x14's being done at 20s. 6d. ($4.57) basis f.o.t.

Galvanized sheets are flat. Business done on No. 24 gage is at £17 12s. 6d. (3.51c. per lb.) f.o.b.

Black sheets are quiet.

On the Continent of Europe

As the Continental position is depressed, there are few buyers, though prices are lower. Business in bars is done at £5 15s. (1.14c. per lb.). Isolated transactions in billets are reported at £5 ($22.30).

In France 133 furnaces were blowing Sept. 1, but makers were talking of curtailment, failing improvement in business.

Belgian markets are dull, though some makers are cutting [prices] keenly.

A previous slight revival in the German domestic market collapsed, owing to Government action to reduce production costs. Buyers now are waiting for lower prices.

LUXEMBURG FEELS COMPETITION

Germany Trying to Regain Old Markets—Prices Go Below Cost in Some Cases

LUXEMBURG, Sept. 25.—The better turn of international politics in Europe had set hopes for a general improvement in trade for August; instead of this, the beginning of the month, right after the London Conference, was marked by a further reaction of Anglo-Saxon exchanges, which upset the metal market again. Selling prices were distinctly under the level of cost, owing to the new rebates granted by the producers.

The Grand Duchy's iron and steel industry is led to considerable sacrifices and is living through a crisis which may prove disastrous to small concerns. The market was, however, a shade better at the last Brussels Bourse, on Sept. 24; the plants were resisting the price fall and, on the whole, rebates were scarcer. This slight revival caused a small current of trade, and prices show a tendency to harden.

Competition Keen in Many Quarters

The Luxemburg industrialists encounter fierce competition from the Germans, who wish to reconquer their former outlets.

In the pig iron section, the Luxemburg, Belgian and

British and Continental prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at $4.46 per £1, as follows:

Durham coke, del'd	£1	5s.	to £1	6s.	$5.57	to	$5.80
Bilbao Rubio oret	1	4			5.35		
Cleveland No. 1 fdy.	4	5			18.95		
Cleveland No. 3 fdy.	4	0			17.84		
Cleveland No. 4 fdy.	3	19			17.62		
Cleveland No. 4 forge	3	18			17.39		
Cleveland basic	4	2½			18.39		
East Coast mixed	4	8½	to 4	9	19.73	to	19.85
East Coast hematite	4	19	to 5	0	22.08	to	22.30
(a) Ferromanganese	13	10	and 13	0*	60.21	and	57.98*
Rails, 60 lb. and up	9	10	to 9	15	42.37	to	43.48
Billets	7	10	to 8	5	33.45	to	36.79
Sheet and tin plate bars, Welsh	8	12½			38.46		
Tin plates, base box	1	3½			5.24		
					C. per Lb.		
Ship plates	9	5	to 9	15	1.84	to	1.94
Boiler plates	13	0	to 13	10	2.59	to	2.69
Tees	9	5	to 9	15	1.84	to	1.94
Channels	8	10	to 9	0	1.69	to	1.79
Beams	8	5	to 8	15	1.64	to	1.74
Round bars, ¾ to 3 in.	9	12½	to 10	2½	1.92	to	2.02
Galv. sheets, 24 gage	17	12½	to 18	0	3.51	to	3.58
Black sheets, 24 gage	13	0	to 13	5	2.59	to	2.64
Black sheets, Japanese specifications	15	5			3.04		
Steel hoops	10	15	and 12	10*	2.14	and	2.49*
Cold rolled steel strip, 20 gage	16	0			3.18		

*Export price.
†Ex-ship, Tees, nominal.
(a) Nominal.

Continental Prices, All F. O. B. Channel Ports

(Nominal)

Foundry pig iron:							
Belgium	£3	14s.			$16.50		
France	3	14			16.50		
Luxemburg	3	14			16.50		
Billets:							
Belgium	5	4			23.19		
France	5	4			23.19		
Merchant bars:					C. per Lb.		
Belgium	5	15	to 5	17½	1.14	to	1.17
Luxemburg	5	15	to 5	17½	1.14	to	1.17
France	5	15	to 5	17½	1.14	to	1.17
Joists (beams):							
Belgium	5	15			1.14		
Luxemburg	5	15			1.14		
France	5	15			1.14		
Angles:							
Belgium	8	0	to 8	5	1.59	to	1.64
⅛-in. plates:							
Belgium	7	0			1.39		
Germany	7	0			1.39		
¼-in. plates:							
Luxemburg	7	0			1.39		
Belgium	7	0			1.39		

Lorraine plants are keen competitors; the average price of No. 3 is 320 Belgian francs ($15.57 per gross ton). British tenders are lower but not accepted.

For semi-finished products, the Lorraine and Luxemburg are more active than the Belgian plants. The rates in Belgian currency are: blooms, 430 to 440 fr. ($20.92 to $21.41); billets, 460 to 470 fr. ($22.39 to $22.87); largets, 480 to 490 fr. ($23.35 to $23.84). British offers are for blooms, £5 ($22.10); billets, £5 4s. 6d. to £5 5s. ($23.10 to $23.21); largets, £5 7s. 6d. ($23.76).

In rolled steels, the minimum rates f.o.b. Antwerp, are quoted by the Luxemburg plants at £5 15s to £5 16s. (1.15c to 1.17c. per lb.) for beams, and £5 17s. 6d. (1.18c.) for bars.

BELGIAN SITUATION VERY WEAK

Buyers Scarce and Prices Down to Cost Figures—Export Business Is Small

ANTWERP, BELGIUM, Sept. 20.—The iron and steel market remains weak; orders are not numerous enough to enable it to recover from its undecided position. Buyers, who are scarce, insist on further reductions before placing orders and in this way force lower prices. The position of makers is certainly as weak as it can be and therefore most of them book at the offers made.

The German competition remains strong and attracts a lot of the available business to German works. Furthermore lower coal prices, especially for industrial qualities, are generally expected, and one may add the lack of confidence caused by the still uncertain political situation.

Belgian makers, with their high costs of production, are at the bottom and if they make further concessions, either on their basis price or in their extras, it is of course only momentarily and partially to fill their order books. Some foresee the eventuality of damping several furnaces, while in general the production is already much reduced.

At home, prices Sept. 17 were approximately as follows:

	Fr.	Cents per Lb.
Foundry pig iron No. 3	345 or	$17.25
Billets, soft Thomas steel	480 or	24.00
Blooms	450 or	22.50
Largets	500 or	25.00
Wire rods	625 or	31.25
Rails	725 or	36.25
Hoops	780 or	39.00 or 1.77
Cold rolled steel hoops	1,120 or	56.00 or 2.54
Drawn steel: squares	1,080 or	54.00 or 2.45
rounds	1,060 or	53.00 or 2.40
hexagons	1,165 or	58.25 or 2.64
Spring steel, best quality	1,050 or	52.50 or 2.39
Bars, basis price	525 or	26.25 or 1.19
Joists and U-iron	515 or	25.75 or 1.17
Rods	620 or	31.00 or 1.41
Corrugated bars	625 or	31.25 or 1.42
Commercial iron No. 2	570 or	28.50 or 1.29
No. 3	600 or	30.00 or 1.36
No. 4	625 or	31.25 or 1.42
Thomas sheets 0.5 mm. (No. 25½ gage)	1,200 or	60.00 or 2.72
1 mm. (No. 19½ gage)	1,040 or	52.00 or 2.36
2 mm. (No. 14 gage)	775 or	38.75 or 1.76
3 mm. (No. 11½ gage)	700 or	35.00 or 1.59
5 mm. (No. 6½ gage)	625 or	31.25 or 1.42
Galvanized sheets 0.5 mm	2,160 or	108.00 or 4.90
1 mm	1,650 or	82.50 or 3.74
Polished sheets, average price	1,500 or	75.00 or 3.40
Steel bands	700 or	35.00 or 1.59
Wire: galvanized	1,200 or	60.00 or 2.72
barbed	1,350 or	67.50 or 3.06
plain	950 or	47.50 or 2.15
annealed	1,000 or	50.00 or 2.27
Wire nails	1,000 or	50.00 or 2.27

Bar iron for export has been done at prices certainly not above £5 16s. 6d. (1.16c. per lb.) f.o.b. Antwerp. The general price was £5 17s. 6d. (1.17c.). Beams were offered at £5 15s. (1.14c.) f.o.b. Business, however, was not plentiful. Japan and China are abstaining from ordering, but exporters bought some quantities of steel for India and different parts of South America. Some smaller business developed also for the Pacific Coast.

Iron business is entirely absent. Prices are therefore largely dropping. For export one could certainly place orders with a reduction of fr. 15 to fr. 20 per ton on the home prices listed in the table.

Sheets and Semi-Finished Steel

As regards sheets, Belgian makers quoted for heavy material prices such as £7, or even £7 2s. 6d. (1.39c. or 1.42c. per lb.), prices which are higher than those quoted by the Germans. These Belgian prices can be shaded somewhat, as the position of makers, owing to lack of business, is especially weak.

Plenty of orders for billets were proposed in Belgium by English importers but prices offered were not high enough. Makers, however, are keeping in contact with buyers and seem disposed to make further concessions in order to meet somewhat the London market. Other semi-finished products show nearly the same weakness. Luxemburg and Lorraine works for this class of material are quoting lower than Belgian makers.

Pig Iron and Coke

The pig iron market is not interesting and business remains scarce. Luxemburg and Lorraine pig iron is offered at very low prices. One blast furnace, producing foundry pig iron, already has been damped in Belgium, while in general the production has been reduced as much as possible. For the few orders passed the highest price paid is between fr. 340 and fr. 350 ($17 and $17.50) delivered at the founder's works.

Belgian Bessemer pig iron is quoted fr. 475, i.e., $23.75 or £5 3s., a price which is too high, as English hematite, East Coast, is offered at as low as £4 16s. c.i.f. Antwerp, which equals approximately fr. 450, or $22.50, if compared on the same basis as the Belgian prices mentioned. Semi-phosphorus foundry pig iron, Belgian origin, is offered at fr. 385, f.o.b. Antwerp, or $19.25, per gross ton.

Coke prices are weak. Furnace coke is offered at fr. 130, or $6.50, with certainly a reduction of fr. 5 per ton for contract quantities. The dropping of prices is of course caused by the last reduction of prices for the German coke, which are imported largely on account of Reparations.

SITUATION HOPEFUL

French Iron and Steel Market Looks for Deferred Improvement—Output Still Being Reduced

PARIS, FRANCE, Sept. 26.—The position of the French market remains unaltered, but the attention of industrialists is, however, engaged on the revival of trade in the United States and the slightly improving tendency of the Belgian Bourse, as they expect a corresponding amelioration of their own market shortly. Meanwhile, there are no real signs of a recovery, and output is being reduced to avoid accumulation of stocks. It is hoped that foreign competition soon will be counteracted by lowering of production costs consequent upon the expected diminution in the price of fuels, reparation coke notably.

Coke.—The supply of coke to the Orca for the first 24 days of September amounted to 219,696 tons, a daily average of over 9100 tons.

Pig Iron.—As the market is quite depressed and home inquiry low, production is reduced. The export situation is a little better. Producers are now at a difficult turning as regards the prices of chill-cast pig iron, which are almost at the level of cost, itemized as follows:

	Fr.
1300 kg. of coke at 160 fr. per ton delivered	208
2 tons of ore at 25 fr.	75
Total, without labor and other expenses	283

Thus, the price of 285 fr. per ton must be considered as quite exceptional and hardly obtainable for the moment. The average price is consequently between 290 and 300 fr. ($15.56 and $16.10 per gross ton) for medium tonnages and 5 fr. higher for smaller transactions, this price applicable both in the North and East, as well as in Lorraine. The present selling rates are 120 fr. lower than those generally applied in the beginning of the year and still lower on the export

markets; in effect, the Belgians are asking now 320 fr., or 299 fr. in French currency ($16.04).

The situation in hematite pig iron is not so favorable as during the past week. Despite the tacit agreement existing between producers, as far as prices are concerned, competition is keen, the average rate being 410 to 415 fr. ($22 to $22.27). Our trade with Italy and Switzerland has expanded. East Coast mixed numbers being sold at 97s., c.i.f Rouen, or, with transport charges, 450 to 460 fr. ($24.15 to $24.68), delivered, British competition in that line is not to be feared.

Ferroalloys.—The Comptoir is accepting orders under official rates, ferrosilicon of 45 per cent yield selling recently at 1070 fr. per ton ($57.40) in the region of the Haute-Marne. British ferromanganese offers at £13, c.i.f. French ports or Antwerp, or 1290 to 1300 fr. ($69.21 to $69.75), which is 100 fr. below the lowest home delivered prices. The Norwegian tenders are lower still, at £12 4s. to £12 8s., French ports, but the quality offered is inferior to the British. The French are securing only trifling orders, owing to their high quotations, 1300 fr. being the minimum rate; in spiegel, the French grades enjoy a good demand at 500 fr. ($26.83) for the 8 to 10 per cent Mn.; 515 to 520 fr. ($27.63 to $27.90) for the 10 to 12 per cent, and 650 fr. ($34.88) for the 18 to 20 per cent.

Semi-Finished Products.—Trading is still restricted and prices much discussed, producers are working for their own steel plants. The home rates are nominal at 38 to 39 fr. ($20.39 to $20.93) for ingots; blooms, 40 to 42 fr. ($21.46 to $22.53); billets, 45 to 47 fr. ($24.15 to $25.22); largets, 50 to 52 fr. ($26.83 to $27.90). The maximum export prices in Belgian currency are: Blooms, 430 fr.; billets, 450 fr.; largets, 480 fr., or £5, £5 4s. 6d. and £5 5s. and £5 7s. 6d. respectively (423, 442, 455 French francs, or $22.70, $23.71 and $24.41).

Rolled Steels.—This section is receiving little interest; delivery times are shorter. The small current of orders at home is insufficient to absorb the production, which has to be reduced. At 50 fr. (1.20c. per lb.), the plants all are seeking orders in beams, but this rate is maintained with difficulty, and the average for important tonnages is between 48.50 and 49.50 fr. (1.16c. and 1.19c.). Rolled steels are weaker at 53 to 54 fr. (1.27c. to 1.29c.) in the East and Lorraine; 56 to 57 fr. (1.34c. to 1.37c.) in the North. Rounds for concrete are worth 51.50 to 54.50 fr. (1.23c. to 1.31c.); rounds for bolts 54 to 57 fr. (1.29 to 1.37c.). Hoops are downward at 69 to 71 fr. (1.65c. to 1.70c.). Standard 46-kg. (93-lb.) rails, 48 to 50 fr. ($25.75 to $26.83), Lorraine Works. For export, the Luxemburg and Belgian plants are more active than the Lorraine. German offers are few, but as low as £5 16s. (488 French francs, or 1.17c. per lb.); Belgian and Luxemburg rates: £5 15s. to £5 16s. for beams; £5 7s. 6d. to £5 17s. 6d. for bars (respectively in Belgian and French currencies: 510, 515, 483, 493; or, 1.16c. and 1.18c. per lb.).

Sheets.—The demand is quiet but orders more numerous and prices steadier for light and medium gages. Heavy sizes are 70 to 72 fr. (1.68c. to 1.73c.) Lorraine and Saar; 75 to 77 fr. (1.80c. to 1.84c.) in the North; medium, 90 to 95 fr. (2.16c. to 2.28c.); light, 103 to 110 fr. (2.47c. to 2.63c.). High-grade, cold-rolled and annealed British black sheets are offered at Rouen, Nantes or Bordeaux at 130 fr. (3.11c.) for the 0.8 mm. (No. 22 gage); 139 fr. (3.33c.) for 0.62 mm. (No. 24); 162.50 fr. (3.89c.) for 0.35 mm. (No. 29) and 166.85 fr. (4c.) for 0.25 mm. (No. 32½ gage) grades. German export price for heavy sheets is £6 8s. 6d. to £7, f.o.b. Bremen or Hamburg (51 French francs, or 1.39c. per lb.), and Belgian tenders are £7 to £7 2s. 6d. maximum.

Wire Products.—Wire rods have declined to 58 to 60 fr. per 100 kg. ($31.12 to $32.20) at works.

Foundry.—While the inflow of orders is not important, a satisfactory activity is recorded. Pipe line and tube makers are well supplied with export orders, owing to exchange and the cheap rates of French pig iron. Recent items involved an order for pig iron pipes at the average price of 115 fr. per 100 kg. (2.75c. per lb.); 300 tons of brake blocks for the State Railroads at 60.95 fr. and 68.40 fr. (1.46c. and 1.64c. per lb.).

TRADE WITH FAR EAST DULL

War in China and Depreciated Exchange in Japan Obstacles to Far Eastern Business—Rail Inquiries Prominent

NEW YORK, Oct. 7.—Trade with the Far East is at a low ebb with Chinese purchasing almost at a standstill as a result of the civil war in China and Japanese trade still suffering from depreciated exchange. Seasonal purchasing of cotton by Japanese mills is expected to continue the depression of the yen in foreign exchange with not much of an upward movement before the beginning of the silk selling season. In the meantime, the prices of iron and steel products in Japan are lower than prices currently quoted by American sellers. While $91 to $93 per ton, c.i.f. Japan could probably be done on light gage black sheets, the Japanese market is reported to be from $87 to $88 per ton and there are reports of sales at as low as $84.

The recent inquiry of the Nippon Oil Co. for 56,000 boxes of tin plate for delivery in the first quarter, evidently did not result in what the buyer considered satisfactory prices, as it is understood purchase has been postponed. Railroad business is still an outstanding feature of the Japanese market. The recent call for bids by Tokio municipality on 35 switches resulted in the award of fifteen 12-ft. switches to Suzuki & Co., who placed them with the leading export interest, ten 14-ft. switches to Mitsui & Co., who placed them with a leading independent export seller and 10 switches reported to have gone to a British bidder. Still pending are the rail inquiries of the South Manchuria Railway Co., Kobe Municipal Tramway Bureau, Japan Sugar Refining Co., Formosa, and an inquiry from a private source for 93 tons of car building material. One Japanese export house in New York recently booked about 500 boxes of 20 x 28 in. tin plate.

One of the few inquiries that have appeared recently from China was for 1000 boxes of tin plate, but the purchaser's idea of price was considerably below the American mill quotation. An exporter dealing exclusively with China recently booked a small tonnage of galvanized wire shorts. Inquiries from China for small lots of copper continue to appear. A recent one for a small lot of copper believed to be from a Hankow mint may develop into business.

LONGER WORK DAY IN GERMANY

Great Benefits Attributed to the Two-Shift System —Higher Output at Lower Cost

BERLIN, GERMANY, Sept. 25.—The steel industry is preparing to resist socialist attempts to restore the 8-hr. day. The Essen expert Heinrichsbauer declares that such a measure would make competition impossible. He prints striking facts from corporation reports to show the enormous cheapening of production cost which Germany achieved when she replaced 8 hr. with 10 hr. in the heavy steel branch. The 10 hr. are exclusive of pauses. The pre-war system of two shifts a day was restored in place of the three shifts a day which prevailed in 1919-23.

A smelting concern which, under the 8-hr. system, produced 38 tons of pig per man per month, produced 68.4 tons after the 10-hr. system came into force. Under the three-shift system the output per man per hour in 1922 was 164 kg. (362 lb.); under the two-shift system this year the output rose to 237 kg. (523 lb.). The 10-hr. day and the two-shift system enabled a large Westphalian ironworks to reduce its staff of employees from 13,500 to 9200, while maintaining the production level unchanged. The annual saving was $2,000,000. Steel works and rolling mills made equally large savings.

Another Essen report states that while under the 10-hr. a day system working hours increased by only 25 per cent, the average increase in output in four rolling mills was 58 per cent. Production costs in one large mill fell 18 per cent after the introduction of a 9½-hr. day.

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Compensations in the New Price Regime

THE great principle of compensation will play an important rôle in the changes in the steel market that will follow the abolition of Pittsburgh plus. In the first place, the reductions in various delivered prices cannot rationally be regarded as a case of everything going out and nothing coming in. The profits of the steel industry depend upon something more than mere chance. If the profits are reduced, that will come about not so much from subtractions due to the individual price reductions as from the dislocation of the trade of both producers and consumers necessarily incident to the change. When prices at one point and at one time are made lower, then at another point or at another time they will tend to be higher. There will be compensation.

It is easy to foresee some of the workings out, for they will repeat, in reverse manner, some things that have been observed in the past. Hitherto, at points remote from Pittsburgh and governed ordinarily by the Pittsburgh plus system, there was a tendency in times of light demand for prices to recede to a more local basis. In future there will be a tendency in time of good demand for such prices to work up to the Pittsburgh market plus the freight that will have to be paid to get Pittsburgh steel.

In the second place there will be a compensating influence that a weakening in the steel market of one district will not have so much tendency to weaken the market in another district as was the case under Pittsburgh plus. Then it was a case of the weakest link in a chain. In future the links will be separate.

In the third place, with the restricted sales areas it seems reasonable to expect, selling costs should decrease. There will be fewer competitors for the orders of a given buyer, hence it ought to cost less to get the orders. It seems to follow from this that the buyer, being in contact with fewer sellers, may not be so well informed as formerly, and may sometimes pay higher prices than he otherwise would pay.

In the matter of contracting, as contrasted with the placing of actual orders for prompt or early delivery, the steel market of the past few years has been totally different from the pre-war market. With the tendency to localized operations, closer relations are likely to develop between mills and the nearby buyers. On the one hand the mill will be desirous of forestalling incursions by other producers, or "dumping," and on the other hand the buyer will want better assurance of a supply, realizing that if the neighboring mill becomes comfortably filled with orders he will probably have to pay a premium, in freight, to secure steel from elsewhere. If such contracting is fostered by the new trade alinement, it is not likely to be of the old "jug-handled," "option" or "accordeon" variety. The contract is likely to be a more businesslike document, with mutual obligations and recognition of rights.

The disturbance to the trade of steel buyers, the manufacturing consumers who sell their wares in the open market, is now attracting much attention. It was obvious that such disturbance would occur. Those who agitated for abolition of Pittsburgh plus wanted lower costs for themselves, but it was clear that the existing trade alinements were of long standing, and to reduce at one point is tantamount to advancing at another point, and if each of two buyers wants a lower price only for himself, each is disconcerted to the extent that the other secures a lower price. The change does not promise to extend the markets of steel buyers in the long run.

Five Marked Years in Steel Treating

WE commented last week on one or two features of the Boston convention of the American Society for Steel Treating. Most unusual was the contribution to one of the sessions made by Professor Campbell of Ann Arbor, who, though sightless, has been seeing more things in steel in the past 30 years than some have found who searched with microscopes. Perhaps the most notable exhibit at Boston was that of the society

itself, with more than one-third of its 3400 members in attendance. That such a membership should have been gathered together in five years indicates both the field that was waiting to be occupied and the enthusiasm of the men in all steel-using industries who are finding ways of getting more and better service out of their steel.

In contrast with some of the older organizations dealing with metallurgy the American Society for Steel Treating covers a field that is closely integrated. It leaves to the societies that for years have dealt with them, the processes of iron and steel production, finding in the uses to which the finished product is put a variety and complexity of problems that will give it ample scope and incentive for years to come.

In Great Britain, forward as British iron and steel metallurgists have been, there is no similar society, the field being covered presumably by the Iron and Steel Institute. Yet as one follows through the rather full summaries of current literature on the heat treatment of steel which appear in the *Journal* of the institute he finds that with few exceptions they are drawn from American sources.

It is not to be expected that the rapid numerical increase of the past five years will be duplicated in the second five years of the American Society for Steel Treating. But a steady growth can be counted on; and so far as technical advance is concerned, who would have the hardihood to set bounds to what the vision, enterprise and talent of 3400 such men can bring to pass on the lines already laid out?

Making Lehigh Greater

OWING to the large percentage of steel manufactured in the United States by companies whose heads were once students of Lehigh University, the address delivered on Oct. 2 at the Annual Founder's Day exercises of that university by Eugene G. Grace, president of the Bethlehem Steel Corporation, and of the board of trustees of the university, calls for special mention in THE IRON AGE.

Mr. Grace shows in what he said the broad vision he has of the contribution a great institution of learning should make to the life of the country. He does not look forward to a bigger Lehigh. Most of our colleges probably would be more efficient if they were smaller. Strength does not lie in numbers of students. Mr. Grace does believe, however, that there should be a greater Lehigh. He says very earnestly that greatness in engineering consists not merely in the ability to build bridges, railroads and canals, but involves the building of human as well as material relationships. Then he quotes President Richards, who said in a recent address:

> The status of the engineer is changing and there is a constantly increasing need for men who are capable of working with other men as well as with materials and processes.

Mr. Grace adds that the engineers of the future must be educated with far greater thoroughness than in the past. The universities must graduate men who can be of real service in solving "the supreme problem that presents itself to the present and the coming generation of mankind—the problem of the distribution of the results of science and of human effort, the problem of distributing nature's bounty to all men in all countries, to the ultimate increase of their happiness."

Mr. Grace and his associates have undertaken to raise a fund of $12,000,000 for their alma mater and about $3,000,000 already has been raised or pledged. "Such is the opportunity and such the need," says Mr. Grace, "that we cannot doubt that the additional sums will be soon forthcoming." The undertaking is a great one. Certainly an effort based on the broad foundation of humanity described by Mr. Grace will have a wider appeal than if it came from a man of narrow vision or little sympathy for his fellow men. The Bethlehem president's appeal is in entire harmony with the action of a man who would pause, as he has done this week, to pay tribute to a humble blacksmith, whose unusual service record of nearly 60 years has just been ended by death, as noted on another page.

May the plan to make a greater Lehigh meet with complete success!

Secretary Hoover Rises to the Occasion

IN a masterly speech that was broadcasted last week, Herbert Hoover, Secretary of Commerce, exposed the fallacies of demagogic demands for Governmental ownership of public utilities and even of industries, and lucidly exposed the evils that inevitably would result from adopting such an economic policy.

Such a step would be in fact revolutionary. It would be contrary to the Constitution that our forefathers drafted and under which we have lived and prospered for 135 years. It would mean an adoption of the principles of socialistic economy, according to which a superior power would undertake to regulate all affairs just as the head of a family does with respect to his immediate household. But whereas the paterfamilias can do that efficiently with respect to a very few persons, no human being can hope to do so successfully with respect to millions.

Secretary Hoover, speaking from experience as a Government executive, with the background of his experience in the conduct of private enterprise, sets out in impressive language and with lucid description the bureaucratic necessities for joint responsibility, administration by mediocrities, promotion by seniority, and functioning under the orders of Congress as a board of directors.

Under such conditions efficiency is not to be expected, but rather the reverse. And that that idea is not conjectural is evinced by the multiplicity of evidence of what has happened in other countries, much smaller and less complicated than ours, which have instituted governmental operation. And what we have before our own eyes in our own administration of the postoffice, in our attempt to create a merchant marine with loss of three billions of the public money, and in our failure to do anything with the remains of our national fleet but operate it at a large loss while private enterprise is operating at a profit.

Governmental ownership and operation of

mines and railroads and other public utilities is urged by a strong element of organized labor; but if it understood its own best interests, which Secretary Hoover has done much to elucidate, this would be the last thing in the world it would advocate. To use the Government as a catspaw to mulct capital and management, when it is owning and operating and using its brains and individualistic methods to produce results that permit of squeezing, is one thing. Governmental ownership and operation that would not produce any such results is another thing. If railroad labor, or any other branch of labor, has any remaining illusions respecting this subject let it consider what has been the fate of the postoffice employees during the era of rising prices.

In fighting the virus of socialistic infection in Great Britain Sir Alfred Mond, himself a great industrialist before he became a statesman, has been the strongest and most effective arm. Secretary Hoover very usefully can play the same part with us, and it is good that he has begun to do so.

The Revival in Coal

THIS week's Geological Survey report accents the increase in bituminous coal production that has been noticed in the past three months. The 10,000,000-ton mark for a week's production has been passed again, the figure for the week ended Sept. 27 being given at 10,189,000 net tons. The rate in April had been well under 7,000,000 tons, and the average in the four months, April to July inclusive, was barely over 7,000,000 tons.

Further increases in coal production are to be expected as winter comes, but it may be noted that even a continuance of the present rate would make a very fair total for the calendar year. Production from Jan. 1 through Sept. 27 is given at 332,121,000 tons. If the rate for the week just reported were continued to Dec. 31, the calendar year's total would be 465,000,000 tons. The only years that have shown 500,000,000 tons or more were 1916, 1917 and 1918, and two of the five post-war years, 1920 and 1923.

The large and rapid increase in production has been accompanied by no substantial increase in prices. Productive capacity being very large, it requires very special circumstances to lift prices, but when such circumstances intervene coal may double, triple or quadruple in market price, advancing easily by dollars per ton when in a smooth-working market a heavy demand cannot advance prices by dimes per ton.

With production costs much lower in the non-union than in the union fields, and prices a few months ago altogether unsatisfactory to the non-union producers, there was basis for an expectation that a large increase in demand would lift prices in the non-union fields, by providing more demand than those fields could meet, causing demand to overflow to the union fields, whose prices were higher. Thus far there has been very little price movement of that sort.

Even the non-union fields are not particularly well employed. The Geological Survey gives details of operation in 36 fields or regions. Only two, the States of Washington and New Mexico, have reached an 80 per cent operation, and only three have reached a 70 per cent operation: Pocahontas, Tug River and Logan—all in West Virginia.

It is true that some of the union fields have had large relative increases in operation, although they are not yet running well. These increases are not due to the fields securing a better competitive position, but to increases in the local demand, preserved by freight differentials from non-union competition.

Rolling Mill Orders Have Been Numerous Lately

Rolling mill orders recently have been quite impressive and it is doubtful whether builders have been as busy since the war period as they are just now. The prospect for continued good business is bright, because where new installations are not planned by the steel manufacturers, there are at least extensive changes looking toward greater efficiency and the reduction of men per job. The latter desideratum is a result of the elimination of the long workday in the steel industry, and the need of men in greater numbers in the working of the more frequent and shorter turns. Just now with the industry running well below capacity the labor supply is ample, but that would not be the case with anywhere nearly full capacity operations. More efficient mills and those requiring the fewest possible number of men in their operation are being installed as a safeguard against future labor shortages. Substitution of electricity for steam as the motive power is a notable trend of the times. All mills recently ordered are to be electrically driven.

Carnegie Steel Co. started this year on the modernization of its Homestead plant; altogether about $25,000,000 will be spent over a period of four years at this plant. The program for this year called for the replacement of some old structural mills by a modern unit. Order for a 44-in. blooming mill was placed several months ago and has been followed recently by others for a 36-in. blooming mill and a 28-32-in. structural mill. At the Duquesne works, the 38-in. blooming mill is being remodeled and the changes involve the substitution of electricity for steam as the driving power.

Bethlehem Steel Co. has embarked on an extensive plant improvement at its Lackawanna and Johnstown plants. For the former plant a 44-in. blooming mill, a 35-in. roughing mill, a 28-in. structural and an 18-14-in. structural mill have been ordered, while at Johnstown two 18-14-in. electrically driven structural mills will be installed and three other mills at that plant will be changed over to be electrically, instead of steam, driven. These installations made necessary a new power house.

Jones & Laughlin Steel Corporation has completed the steel work for a new mill building at its Aliquippa works to house a new high speed continuous bar mill of 10 stands for rolling the smaller sizes of bars in rounds, squares and flats and small shapes. This mill when rolling small rounds, will be able to run the steel through at the rate of close to 3000 ft. per minute. This mill will probably be in operation early in 1925. The company has plans for extensive changes in its rolling mills at its Pittsburgh works.

Donner Steel Co., Buffalo, is changing its 40-in. blooming mill to accommodate the replacement of a steam engine by a motor for driving it.

Wisconsin Steel Co. recently placed the order for a 40-in. blooming mill to be electrically driven.

National Tube Co. has placed a 14-16-in. continuous skelp mill for its new plant at Gary, Ind.

Four new sheet mills at its Mercer Works, Farrell, Pa., are the contribution of the American Sheet & Tin Plate Co. to the year's rolling mill orders. Youngstown Sheet & Tube Co. is building eight new sheet mills at Youngstown.

CONTROLS POTI ORE EXPORTS

Contract Giving Monopoly on Exports of Caucasian Manganese Ore to American Interests Reported Pending

A 25-year contract, giving control of all exports of Caucasian manganese ore from Georgia, is reported to be in preparation between the Russian Soviet Government and American interests represented by the banking house of W. A. Harriman & Co. The contract is claimed to give a monopoly of the exportation of manganese ore from the Chicatouri district, including an area of 10,000 acres with estimated potential resources of 100,000,000 tons of ore.

The contract is said to involve the improvement of harbor facilities at Poti and the construction of railroad terminals. In view of the fact that the contract is not yet reported as signed, persons familiar with manganese ore importation are not inclined to comment on the possible result of control by an American company. Since the armistice, exportation of manganese ore from Georgia has been in the hands of a company known as the "Chemo" and understood to be Dutch in its control. Operation has been in the hands of 20 lessees, including French, Belgian, German, Dutch and Greek companies and a part of the fields previously not leased was under operation of the Georgian Government. It is believed that the lease of the Dutch company which controls exportation expires early this month.

It is reported, but not confirmed, that an understanding has been reached that electric furnaces are to be built at the mines to make ferromanganese there rather than ship the ore, as has been done in the past.

According to the statistics of a large importer of manganese ore in the United States, a total of 82,932 gross tons of Caucasian manganese ore was imported in the first six months of this year against 68,750 gross tons from Brazil, the next largest shipper to the United States.

Monterey Iron & Steel Co. Extensions

The Monterey Iron & Steel Co. (Cia. Fundidora de Fierro y Acero de Monterey, S. A.), of Monterey, Mexico, had a large exhibit at the International Exposition held at El Paso, Texas, Sept. 18-28, on which it was awarded the grand prize. The exhibit, which was in charge of L. L. Schofield, special representative, of Eagle Pass, Texas, included samples of iron and steel products of the company, and their extent and variety were a surprise to exposition visitors. Sections of steel rails from 8 to 110 lb. were shown; also I-beams and channels up to 12 in., samples of bolts and nuts, including lag screws and track bolts; rivets, large and small rivets, cap and set screws, locomotive axles and other forgings, and chrome steel bars for various uses. A large ingot mold of the company's own make was also in the exhibit.

The company is operating at present four open-hearth furnaces and one Bessemer converter. Plans are under way for adding another 50-ton furnace. It is stated that further development work is contemplated at the Durango Iron Mountain, which was acquired by the company about two years ago.

Mahoning Valley Sheet Mills Meet Chicago Competition

YOUNGSTOWN, Oct. 7.—Managers of sales departments of Valley steel companies and department sales managers say that the situation with respect to prices is clarifying to some extent. To hold Chicago district business in sheets and wire products, district independents are meeting the quotations of the leading interest, and are absorbing the difference.

Black sheets, No. 28 gage, for instance, are being quoted at 3.50c., Pittsburgh, and at 3.65c., Chicago, and the prices of the leading interest on other grades are being met.

Fully integrated steel makers are in position to pursue this policy for some time, but the non-integrated sheet rollers, obliged to purchase their sheet bar requirements, will be placed at a disadvantage, especially in periods of very keen competition for business.

In times of normal business, the elimination of Pittsburgh plus is not expected to work a serious hardship on the independents, who are relying upon the law of supply and demand to come to their rescue. It is in depressed times, when competition is very keen, that the producers whose plants are largely localized, may be compelled to withdraw from consuming districts where competitors have substantial capacity.

Sales departments are optimistic with respect to the volume of tonnage coming to the mills. Thus far in October, new business compares very favorably with that received in the corresponding period of September. This is regarded as especially favorable, in view of the pricing unsettlements of the past few weeks and the near approach of the Presidential election.

Improvement in Operating Schedules at Youngstown

YOUNGSTOWN, Oct. 7.—Following a moderate decline in new business due to uncertainties with respect to steel pricing methods, tonnage is coming to Valley mills in larger volume. Schedules this week show a moderate improvement as compared with the preceding week, but business is still spotty.

Except for four idle tin mills at its plant in Leavittsburg, the Trumbull Steel Co., Warren, is operating at a rate close to normal.

This week the Republic Iron & Steel Co. started its rebuilt Bessemer plant, but production is being held back until the new equipment is more thoroughly worked out.

Open-hearth steel making shows an increase of one furnace over the preceding week, with 29 of 52 independent units melting in the Mahoning Valley. With the Bessemer department of the Youngstown Sheet & Tube Co. in action, steel production in the Valley is therefore substantially better than it has been.

There is likewise a modest gain in sheet mill schedules, with six more mills on the active list than last week. Of 120 sheet and jobbing mills in the Valley, 75 started the week. The Mahoning Valley Steel Co., whose entire plant at Niles was down last week, has five mills in action. This gain is offset, though, by the suspension of the Waddell Steel Co.

Merchant bar schedules show that the Republic Iron & Steel Co. is operating its 14-16 in. mill and a light mill, while the Sheet & Tube company has its 12-in. mill in operation.

The Sheet & Tube company may start at an early date its last idle blast furnace in the East Youngstown group.

Tennessee Company's New Mill—Activities of Southern Plants

BIRMINGHAM, ALA., Oct. 7.—The Tennessee Coal, Iron & Railroad Co. has drawn plans and will start work at once on an addition to the blooming mill at Fairfield, near here, in order to produce smaller billets and sheet bars, the output to be used in the rolling mills at Bessemer, where cotton ties are to be manufactured. The addition will cost approximately $500,000.

The car works of the Chickasaw Shipbuilding & Car Co., subsidiary of the Tennessee Coal, Iron & Railroad Co., at Fairfield, Ala., will start the new year with a number of orders in hand. The Southern Railway has placed an order for 400 stock cars with this plant, to be manufactured during the earlier part of 1925. Other roads in this section will place business with this plant.

Directors of the Southern Railway, on a tour of the system, will be in Birmingham for a day next week, one of the principal objects of the trip being to inspect the new shops at North Birmingham, where locomotive and car repairing shops have been erected. The Birmingham district is one of the more important sections on the Southern Railway and the traffic being got from this district has been steadily increasing.

SEPTEMBER IRON OUTPUT

Increase Over August 7567 Tons Per Day

Net Gain of 23 Furnaces, with 26 Blown in and 3 Shut Down

Complete figures for the pig iron production in September show an increase over the estimated output published last week, as obtained by telegraph. This is due in part to a faster rate of operations last month than that of August, which was taken as the basis for the estimate.

The production of coke pig iron for the 30 days in September amounted to 2,053,264 gross tons, or 68,442 tons per day as compared with 1,887,145 tons, slightly revised, or 60,875 tons per day for the 31 days in August. This is an increase of nearly 12.5 per cent in daily rate. The turn upward which started in August, when the increase in daily rate was about 6.5 per cent, has been intensified nearly twofold.

There were 26 furnaces blown in and only 3 blown out or banked in September, the net gain being 23 as compared with 6 for August. The capacity of the 173 furnaces active on Oct. 1 is estimated at 72,235 tons per day contrasting with 63,070 tons per day for the 150 furnaces active on Sept. 1. Of the 26 furnaces blown in last month 6 were Steel Corporation stacks, 14 were independent steel company furnaces and 6 were merchant units. Two independent steel company stacks and one merchant furnace were shut down.

The ferromanganese production in September was 13,263 tons or 2545 larger than in August. The output of spiegeleisen was only 5033 tons, or next to the lowest this year, the April production having been only 4240 tons.

Daily Rate of Production

The daily rate of production of coke and anthracite pig iron by months from September, 1923, is as follows:

Daily Rate of Pig Iron Production by Months—Gross Tons

	Steel Works	Merchant	Total
September, 1923	78,799	25,385	104,184
October	77,255	24,331	101,586
November	72,352	24,124	96,476
December	69,921	24,304	94,225
January, 1924	73,368	24,016	97,384
February	83,126	22,900	106,026
March	86,276	25,533	111,809
April	82,101	25,680	107,781
May	62,176	22,182	84,358
June	50,237	17,304	67,541
July	43,353	14,224	57,577
August	45,591	15,284	60,875
September	50,312	18,130	68,442

The figures for daily average production, beginning with January, 1918, are as follows:

Daily Average Production of Coke and Anthracite Pig Iron in the United States by Months Since Jan. 1, 1918—Gross Tons

	1918	1919	1920	1921	1922	1923	1924
Jan.	77,799	106,525	97,264	77,945	53,063	104,181	97,384
Feb.	82,835	105,006	102,720	69,187	58,214	106,935	106,026
Mar.	103,648	99,685	108,900	51,468	65,675	113,673	111,809
Apr.	109,607	82,607	91,327	39,768	69,070	118,324	107,781
May	111,175	68,002	96,312	39,394	74,409	124,764	84,358
June	110,798	70,495	101,451	35,494	78,701	122,548	67,541
July	110,354	78,340	98,931	27,889	77,592	118,656	57,577
Aug.	109,341	88,496	101,529	30,780	58,586	111,274	60,875
Sept.	113,942	82,932	104,310	32,850	67,791	104,184	68,442
Oct.	112,482	60,115	106,212	40,215	85,092	101,586	.....
Nov.	111,802	79,745	97,830	47,183	94,990	96,476	.....
Dec.	110,762	84,944	87,222	53,196	99,577	94,225	.....
Year	105,496	83,789	99,492	45,325	73,645	109,713	.....

Production of Steel Companies—Gross Tons

Returns from all furnaces of the United States Steel Corporation and the various independent steel companies, as well as from merchant furnaces producing ferromanganese and spiegeleisen, show the foregoing totals of steel making iron, month by month, together with ferromanganese and spiegeleisen. These last, while stated separately, are also included in the columns of "total production."

Production of Steel Companies—Gross Tons

	Total Production		Spiegeleisen and Ferromanganese			
			1923		1924	
	1923	1924	Fe-Mn	Spiegel	Fe-Mn	Spiegel
Jan.	2,479,727	2,274,005	19,358	12,056	20,735	7,948
Feb.	2,259,154	2,410,658	21,282	3,657	22,405	9,870
Mar.	2,724,305	2,674,565	20,730	13,832	22,351	13,796
Apr.	2,704,360	2,463,027	20,808	7,440	23,580	4,240
May	2,976,892	1,927,461	19,568	9,533	14,993	9,336
June	2,727,208	1,507,110	19,717	18,289	20,049	9,405
½ year	15,871,646	13,256,826	121,564	64,807	124,113	54,595
July	2,752,738	1,343,952	26,493	12,876	14,367	15,328
Aug.	2,680,851	1,413,314	22,045	5,586	10,718	8,010
Sept.	2,363,967	1,509,360	23,206	4,478	13,263	5,033
Oct.	2,394,922	.....	20,015	15,931	.....	.....
Nov.	2,170,567	.....	14,839	16,783	.....	.....
Dec.	2,167,563	.....	18,069	10,124	.....	.....
Year	30,402,254	.....	246,231	130,585	.....	.....

Output by Districts

The accompanying table gives the production of all coke and anthracite furnaces for September and the three months preceding.

Pig Iron Production by Districts, Gross Tons

	Sept. (30 days)	Aug. (31 days)	July (31 days)	June (30 days)
New York	101,702	80,686	86,738	108,263
New Jersey	.....	.....	.....	.....
Lehigh Valley	63,458	57,745	45,480	53,627
Schuylkill Valley	51,927	51,153	50,735	56,472
Lower Susquehanna and Lebanon Valleys	27,323	21,696	21,970	37,647
Pittsburgh district	437,864	425,471	380,058	429,821
Shenango Valley	84,018	82,058	66,350	65,566
Western Pa.	82,639	59,479	43,754	58,282
Maryland, Virginia and Kentucky	41,470	34,106	42,072	42,601
Wheeling district	80,465	72,678	61,728	94,213
Mahoning Valley	195,292	167,073	142,348	124,065
Central and Northern Ohio	243,011	222,070	223,295	260,253
Southern Ohio	15,542	12,243	12,509	19,348
Illinois and Indiana	302,112	271,474	267,161	325,142
Mich., Minn., Mo., Wis., Colo. and Utah	92,764	98,682	109,068	119,119
Alabama	221,190	215,556	218,676	219,507
Tennessee	12,487	14,975	12,957	11,795
Total	2,053,264	1,887,145	1,784,899	2,026,221

Capacities in Blast Oct. 1

The following table shows the number of furnaces in blast Oct. 1 in the different districts and their capacity, also the number and daily capacity in gross tons of furnaces in blast Sept. 1.

Coke and Anthracite Furnaces in Blast

Location of Furnaces	Total Stacks	Oct. 1 In Blast	Oct. 1 Capacity per Day	Sept. 1 In Blast	Sept. 1 Capacity per Day
New York:					
Buffalo	22	11	4,300	7	2,885
Other New York	5	0	....	0	....
New Jersey	4	0	....	0	....
Pennsylvania:					
Lehigh Valley	12	5	2,145	4	1,850
Spiegeleisen	2	1	165	1	155
Schuylkill Valley	15	5	1,730	5	1,705
Lower Susquehanna	9	2	900	1	465
Ferromanganese	1	0	....	0	....
Lebanon Valley	4	1	190	1	185
Ferromanganese	2	1	45	1	45
Pittsburgh District	55	31	14,960	29	14,090
Ferro and spiegel.	4	3	300	3	300
Shenango Valley	17	6	2,800	6	2,290
Western Pa.	22	9	3,150	6	2,390
Ferro and spiegel.	2	0	....	0	....
Maryland	5	4	1,690	2	940
Ferromanganese	1	0	....	0	....
Wheeling District	14	6	2,680	6	2,580
Ohio:					
Mahoning Valley	28	14	6,960	12	5,920
Central and Northern	25	15	7,600	14	7,160
Southern	13	3	670	1	290
Spiegeleisen	1	0	....	1	100
Illinois and Indiana	42	20	10,670	17	9,050
Mich., Wis. and Minn.	12	5	2,090	5	2,100
Colo., Mo. and Utah	6	3	1,000	3	925
The South:					
Virginia	18	2	265	1	115
Kentucky	7	0	....	0	....
Alabama	39	23	7,510	21	7,050
Ferromanganese	1	0	....	0	....
Tenn., Ga. and Texas	15	3	415	3	480
Total	403	173	72,235	150	63,070

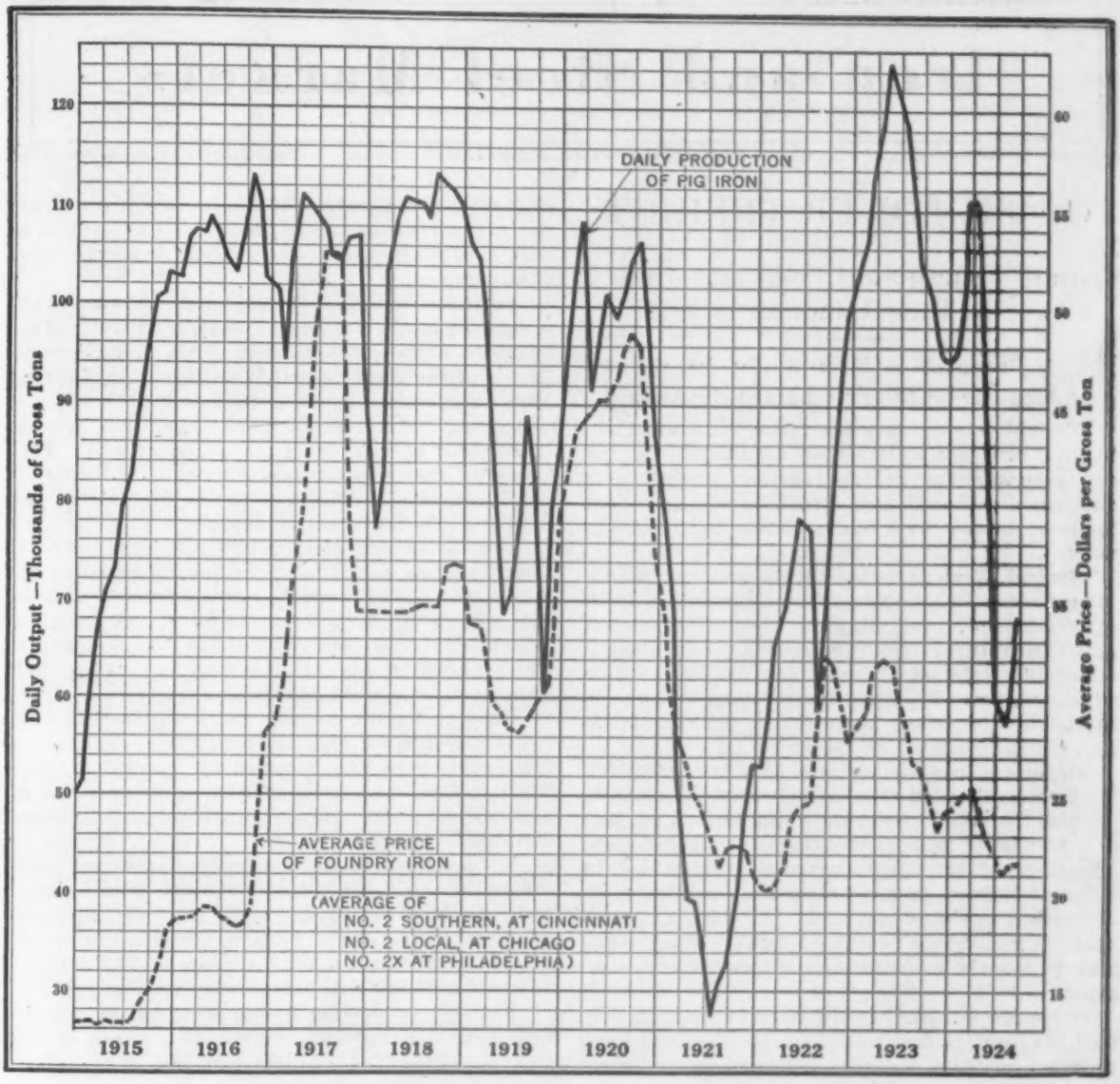

Diagram of Pig Iron Production and Price

Among the furnaces blown in during September were the following: Three furnaces at the Lackawanna plant of the Bethlehem Steel Corporation and one Susquehanna furnace in the Buffalo district; one furnace at the Bethlehem plant of the Bethlehem Steel Corporation in the Lehigh Valley; one furnace at the Steelton plant of the Bethlehem Steel Corporation in the lower Susquehanna Valley; No. 6 Duquesne furnace of the Carnegie Steel Co. and one Eliza furnace of the Jones & Laughlin Steel Corporation in the Pittsburgh district; one furnace at the Cambria plant of the Bethlehem Steel Corporation, the Colonial and the Perry furnaces in western Pennsylvania; the Oriskany furnace in Virginia; two furnaces at the Maryland plant of the Bethleham Steel Corporation in Maryland; Grace furnace of the Youngstown Sheet & Tube Co. and two Ohio furnaces of the Carnegie Steel Co. in the Mahoning Valley; the Dover and United furnaces in central and northern Ohio; the Portsmouth furnace in southern Ohio; one furnace of the Illinois Steel Co., one furnace of the Youngstown Sheet & Tube Co. and two Gary furnaces in the Chicago district; one furnace of the Sloss-Sheffield Steel & Iron Co. and one furnace of the Woodward Iron Co. in Alabama.

Among the furnaces blown out or banked in the month of September were the following: One furnace of the American Rolling Mill Co. at the Columbus works in central Ohio; the furnace of the St. Louis Coke & Chemical Co. in Illinois and the Cherry Valley furnace in the Mahoning Valley.

Production and Price Chart

The fluctuations in pig iron production from 1915 to the present time are shown in the accompanying chart. The figures represented by the heavy lines are those of the daily average production, by months, of coke and anthracite iron. The dotted curve on the chart represents monthly average prices of Southern No. 2 foundry pig iron at Cincinnati, local No. 2 foundry iron at furnaces in Chicago, and No. 2X at Philadelphia. They are based on the weekly quotations of THE IRON AGE.

Production of Coke and Anthracite Pig Iron in United States by Months, Beginning Jan. 1, 1920—Gross Tons

	1920	1921	1922	1923	1924
Jan.	3,015,181	2,416,292	1,644,951	3,229,604	3,018,890
Feb.	2,978,879	1,937,257	1,629,991	2,994,187	3,074,757
Mar.	3,375,907	1,595,522	2,035,920	3,523,863	3,466,086
Apr.	2,739,797	1,193,041	2,072,114	3,549,736	3,233,428
May	2,985,682	1,221,221	2,306,679	3,867,694	2,615,110
June	3,043,540	1,064,833	2,361,028	3,676,445	2,026,221
½ year.	18,138,986	9,428,166	12,050,683	20,841,534	17,434,492
July	3,067,043	864,555	2,405,265	3,678,334	1,784,899
Aug.	3,147,402	954,193	1,816,170	3,449,493	1,887,145
Sept.	3,129,323	985,529	2,033,720	3,125,512	2,053,264
Oct.	3,292,597	1,246,676	2,627,844	3,149,158	.....
Nov.	2,934,908	1,415,481	2,849,703	2,894,295	.....
Dec.	2,703,855	1,649,086	3,086,898	2,920,582	.....
Year*	36,414,114	16,543,686	26,880,283	40,059,308	.....

*These totals do not include charcoal pig iron. The 1923 production on this iron was 251,177 tons.

Iron and Steel Markets

TO ASK LOWER FREIGHTS

Central Western Steel Companies Protest Their Handicap

Merger Proposals to Meet Steel Corporation's Advantage—Chicago's Larger Bookings

Freight rate changes for which Pittsburgh and Youngstown independent steel companies will ask and proposals for linking together producers in different districts in new consolidations have been foremost in the price basing developments of the week.

Central Western independents will put before the railroads and the Commerce Commission at an early date the disadvantage to them of fifth-class rates from the Pittsburgh district, as against a commodity rate on Chicago district steel. This situation gives 17½c. per 100 lb. from Chicago to St. Louis, 304 miles, against 19c. between Pittsburgh and Cleveland, or 150 miles.

Reports of possible mergers have been plentiful. While it is doubted that actual negotiations have started, there is no question of the serious purpose of a number of important companies to parallel the advantage of the Steel Corporation in having in different districts great plants from which a variety of finished products can be shipped with minimum hauls to consumers' works. Some of these plans may be months in maturing; others may come on rapidly.

Thus far October has shown some gains in new business over the first week in September, and some progress has been made by sellers in getting their bearings under plural basing. Operations for the whole industry are slightly under 60 per cent.

On certain products Chicago mills just now are booking business faster than Pittsburgh and Ohio mills. This is taken to mean that some Western consumers are making sure of getting their steel supply from nearby sources, seeing that freight from Pittsburgh or Youngstown would have to be paid on all orders in excess of Chicago capacity.

At all events Chicago mills give the best reports concerning current bookings. On plates, shapes, bars and rails one important producer there reports the largest week's total in new orders and specifications since January, 1923. Increased buying by automobile and implement producers is a factor.

The market situation in wire products, sheets and pipe is becoming better adjusted. A few outside mills are meeting the new Chicago district prices, absorbing the difference in freight, but a considerable number of independents, particularly sheet mills, have not decided whether they will make the necessary concessions.

While at Chicago rather more firmness in plate, shape and bar prices is indicated, reports from Pittsburgh and Cleveland show a continued tendency to weakness. Sheet mill operations in all districts are on a larger scale.

On cold rolled strips, Cleveland has now been generally adopted by independent mills as a basing point. In both cold finished steel bars and cold rolled strips the situation seems to turn on the amount of capacity the Steel Corporation's wire subsidiary has at the various basing points it has named.

Purchase of 5650 freight cars in the week brings the total since Sept. 1 to about 25,000. The Southern Railway bought 3650 cars and 50 locomotives and the Reading and Wheeling & Lake Erie, 1000 cars each. Fresh inquiries for 4400 have come out. The Florida East Coast has placed 15,000 tons of rails with the Alabama mill. The Chicago Great Western has ordered 7000 tons and the Chesapeake & Ohio is inquiring for 30,000 tons in addition to its recent purchases.

Low fabricated steel prices are bringing out more building work than is ordinarily expected at this season. The week's awards of about 27,000 tons were 40 to 50 per cent ahead of any week in September. New projects call for 33,000 tons of which 14,000 tons is for civic work in Chicago and 9000 tons for Brooklyn subway construction.

Pig iron buying is light and is confined almost entirely to prompt and last quarter delivery. The few buyers who have sounded the market for delivery in the first quarter of 1925 have encountered higher quotations and in nearly all cases have declined to contract.

Revised pig iron figures for September show an output of 2,053,264 tons, or 68,442 tons a day, which is 1200 tons a day more than the estimate made on Sept. 30. The 173 furnaces in blast on Oct. 1, represent a daily capacity of 72,235 tons, as against 63,070 tons for 150 furnaces on Sept. 1.

Pig iron production is now at a yearly rate of 26½ million tons, which is about 65 per cent of the record output of 40,361,000 tons last year. This month may show a further slight increase, as here and there a furnace is blowing in.

For eight successive weeks THE IRON AGE pig iron composite price has stood at $19.46 per ton. It is $3.40 below the year's peak of early March and near the lowest mark of the past 30 months.

THE IRON AGE finished steel composite price remains for a third week at 2.474c. per lb., the lowest figure since early January, 1923. Eight months ago, at the year's high, it was 2.789c.

Pittsburgh

Growing Dissatisfaction with Freight Rates—Pig Iron Very Dull

PITTSBURGH, Oct. 7.—Steel business with manufacturers in this and nearby districts is at least holding its own despite some variation in the experiences of the different companies and in the way the different products are moving. The Carnegie Steel Co. reports that its orders so far this month are running slightly ahead of those in the same period in September, but this is hardly true of independent companies producing the same lines as the Carnegie company. Prompt adjustment to the changed mode of quoting pipe and wire products, incident to the abolition of the Pittsburgh plus method of quoting, has been followed by some

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Oct. 7, 1924	Sept. 30, 1924	Sept. 9, 1924	Oct. 9, 1923
No. 2X, Philadelphia‡	$21.76	$21.76	$21.76	$24.76
No. 2, Valley Furnace†	19.50	19.50	20.00	24.00
No. 2, Southern, Cin'ti†	21.55	21.55	21.55	25.05
No. 2, Birmingham†	17.50	17.50	17.50	21.00
No. 2 foundry, Chicago*	20.50	20.50	20.50	25.00
Basic, del'd, eastern Pa	20.00	20.00	20.00	24.50
Basic, Valley furnace	19.00	19.00	19.00	24.00
Valley Bessemer del. P'gh.	21.76	21.76	21.76	27.26
Malleable, Chicago*	20.50	20.50	20.50	25.00
Malleable, Valley	19.50	19.50	20.00	24.00
Gray forge, Pittsburgh	20.76	20.76	21.26	25.26
L. S. charcoal, Chicago	29.04	29.04	29.04	30.04
Ferromanganese, furnace	95.00	95.00	95.00	110.00
Rails, Billets, Etc., Per Gross Ton:				
O.-h. rails, heavy, at mill	$43.00	$43.00	$43.00	$43.00
Bess. billets, Pittsburgh	36.00	36.00	37.00	40.00
O.-h. billets, Pittsburgh	36.00	36.00	37.00	40.00
O.-h. sheet bars, P'gh	37.00	37.00	37.50	42.50
Forging billets, base, P'gh.	42.00	42.00	42.00	47.50
O.-h. billets, Phila	41.17	41.17	42.17	45.17
Wire rods, Pittsburgh	46.00	46.00	46.00	51.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb	2.00	2.00	2.00	2.40
Light rails at mill	1.85	1.85	1.85	2.15
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.32	2.32	2.32	2.67
Iron bars, Chicago	2.10	2.10	2.15	2.35
Steel bars, Pittsburgh	2.00	2.00	2.10	2.40
Steel bars, Chicago	2.00	2.00	2.00	2.50
Steel bars, New York	2.34	2.34	2.44	2.74
Tank plates, Pittsburgh	1.80	1.80	1.80	2.50
Tank plates, Chicago	2.00	2.00	2.10	2.60
Tank plates, New York	1.94	1.94	1.99	2.84
Beams, Pittsburgh	2.00	2.00	2.00	2.50
Beams, Chicago	2.00	2.00	2.10	2.60
Beams, New York	2.24	2.24	2.34	2.84
Steel hoops, Pittsburgh	2.50	2.50	2.60	3.15

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

Sheets, Nails and Wire,	Oct. 7, 1924	Sept. 30, 1924	Sept. 9, 1924	Oct. 9, 1923
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.	3.50	3.50	3.50	3.75
Sheets, galv., No. 28, P'gh.	4.60	4.60	4.60	5.00
Sheets, blue, 9 & 10, P'gh.	2.70	2.70	2.70	3.00
Sheets, black, No. 28, Ch'go dist. mill	3.60	3.60	...	...
Sheets, galv., No. 28, Ch'go dist. mill	4.70	4.70	...	...
Sheets, blue, 9 & 10, Ch'go dist. mill	2.80	2.80	...	...
Wire nails, Pittsburgh	2.75	2.75	2.80	3.00
Plain wire, Pittsburgh	2.50	2.50	2.55	2.75
Barbed wire, galv., P'gh.	3.45	3.45	3.50	3.80
Wire nails, Ch'go dist. mill	2.85	2.85	...	...
Plain wire, Ch'go dist. mill	2.60	2.60	...	...
Barbed wire, galv., Ch'go dist. mill	3.55	3.55	...	...
Tin plate, 100-lb. box, P'gh.	$5.50	$5.50	$5.50	$5.50
Old Material, Per Gross Ton:				
Carwheels, Chicago	$18.00	$18.00	$18.00	$18.00
Carwheels, Philadelphia	17.50	18.00	18.00	20.50
Heavy steel scrap, P'gh	18.00	18.00	17.50	16.00
Heavy steel scrap, Phila.	17.00	17.00	17.00	16.00
Heavy steel scrap, Ch'go	16.00	16.50	16.50	14.15
No. 1 cast, Pittsburgh	18.00	18.00	18.00	20.00
No. 1 cast, Philadelphia	17.50	18.00	18.00	19.50
No. 1 cast, Ch'go (net ton)	17.50	18.00	18.50	19.00
No. 1 RR. wrot. Phila.	18.50	19.00	19.00	19.00
No. 1 RR. wrot. Ch'go (net)	14.50	15.00	15.00	14.00
Coke, Connellsville:				
Per Net Ton at Oven:				
Furnace coke, prompt	$3.00	$3.00	$3.00	$4.00
Foundry coke, prompt	4.00	4.00	4.00	4.75
Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	13.12½	13.12½	13.50	13.00
Electrolytic copper, refinery	12.75	12.75	13.12½	12.75
Zinc, St. Louis	6.20	6.15	6.15	6.30
Zinc, New York	6.55	6.50	6.50	6.65
Lead, St. Louis	7.82½	7.80	7.95	6.65
Lead, New York	8.00	8.00	8.10	6.85
Tin (Straits), New York	49.62½	48.25	51.12½	42.25
Antimony (Asiatic), N. Y.	11.00	11.25	11.00	7.50

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market report on other pages.

THE IRON AGE Composite Prices

Oct. 7, 1924, Finished Steel, 2.474c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 88 per cent of the United States output of finished steel.

Sept. 30, 1924,	2.474c.
Sept. 9, 1924,	2.496c.
Oct. 9, 1923,	2.775c.
10-year pre-war average,	1.689c.

Oct. 7, 1924, Pig Iron, $19.46 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham.

Sept. 30, 1924,	$19.46
Sept. 9, 1924,	19.46
Oct. 9, 1923,	23.79
10-year pre-war average,	15.72

1924 to Date			1923		
High		Low		High	Low
2.789c., Jan. 15		2.474c., Sept. 23	Finished Steel	2.824c., April 24	2.446c., Jan. 2
$22.88, Feb. 26		$19.29, July 8	Pig Iron	$30.86, March 20	$20.77, Nov. 20

loosening up of business in those lines which was held back during the period of uncertainty as to prices.

Sheet business, on the other hand, seems to have quieted down in the past week and in the distribution of tin plate business the leading interest seems to have fared somewhat better than the independent companies. Production of ingots in this and nearby districts is holding right around 60 per cent of theoretic capacity. Viewed from the standpoint of potential production, this is a rather low rate, but it makes a fairly favorable comparison with the average yearly production for the five years from 1919 to 1924, which statisticians have figured to be 65 per cent of capacity.

Confusion incident to the abandonment of Pittsburgh as a sole basing point on steel is not yet entirely eliminated, although in addition to those making wire products and pipe, producers of cold-finished steel bars and of cold-rolled strips appear to have made definite progress toward adjustment to the new order. This has come about chiefly by equalization of freights with the mills having the lowest rate of freight to a given destination. In cold-finished steel bars and cold rolled strips, the most disturbing feature seems to be as to just how much capacity the American Steel & Wire Co. has at some of the points at which it has established base prices. Independent manufacturers know pretty well the capabilities of the Steel Corporation units, both as to production and range of sizes, and the disturbance has been created largely by erroneous statements which have been published concerning these products. There

is some evidence of localization of business. Advices from Chicago indicate that mills in that district are filling up pretty steadily and since this has not been the experience of Pittsburgh district mills, it is patent that buyers are quick to take advantage of a new situation to patronize the nearby mills.

It is becoming increasingly apparent on business in the West that Pittsburgh district mills are at a decided disadvantage in the matter of freight rates with Chicago district mills and there is increased talk of an appeal for an adjustment. It is pointed out that the freight from the Chicago district mills to St. Louis, a distance of 304 miles, is 17½c. per 100 lb., while Cleveland, only about 150 miles from Pittsburgh, carries a freight charge of 19c. per 100 lb.

The explanation for the wide discrepancy is that the Chicago district mills enjoy a commodity rate classification while shipments from this district are on fifth class rates. A system of tariffs based on distance from both points would mean that Pittsburgh mills could go greater distances into competitive territory than now is possible.

Merger mongers are active again, and are setting up some fantastical possibilities, but if any negotiations actually have been started, the news is carefully concealed. One important consideration that seems to be lacking in the mergers which have been suggested is that not much thought has been given as to where the suggested purchasing companies were to secure the necessary funds. It has been an extremely quiet week in all of the primary materials. It is doubtful whether the pig iron producers have had a quieter week this year than the last one has been.

Pig Iron.—Last week's transactions, which amounted to about 2000 tons, look large by comparison with those of the present week, when it is doubtful if total sales of all producers amounted to more than 1000 tons. Important consumers in this district are well covered on iron for the present quarter and the smaller users are content to take on iron only as they see a need for it. Most of the business has been in carload lots and on these recent prices have prevailed. No basic iron is included in the week's business and inquiry for that grade is practically nil. If the market has a tendency one way or the other, it is not apparent because there is so little interest on the part of consumers. W. P. Snyder & Co. make the average price of Bessemer iron from Valley furnaces in September $20 and of basic $19, the same prices as in August.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.76 per gross ton:

Basic	$19.00
Bessemer	20.00
Gray forge	$19.00 to 19.50
No. 2 foundry	19.50 to 20.00
No. 3 foundry	19.00 to 19.50
Malleable	19.50
Low phosphorus, copper free	27.00 to 28.00

Ferroalloys.—It is reported that British ferromanganese has been sold for first quarter of 1925 delivery at $95, c.i.f. Atlantic seaboard duty paid for the account of buyers. Willingness of producers to sell or protect consumers that far ahead at $95 would seem to "spike" the suggestions recently heard of an early advance in prices on British material. Forward purchases were not by consumers in this immediate district, all of whom have ample supplies to carry them over the remainder of this year and just now are not interested in their early 1925 requirements. The leading domestic producer still has a quotation of $100 furnace, with freight equalized with that from the seaboard but it is meaningless insofar as sales are concerned as it has been since first announced four weeks ago. Consumer interest in 50 per cent ferrosilicon is almost negligible; prices hold at $72 to $75, delivered east of the Mississippi River. On 20 per cent spiegeleisen relatively small lots now are moving at the inside quotation. Prices are given on page 955.

Semi-Finished Steel.—The market is not showing enough life to prove anything as to prices. The common asking price of mills here is $37 for billets, slabs and sheet bars and some have a price of $37.50 for the latter product, but it has become fairly widely noised about that a local sheet maker about three weeks ago was able to secure about 40,000 tons of sheet bars and light slabs at a price of about $35, Pittsburgh, and naturally the nonintegrated manufacturers are not tugging at the sleeves of producers to let them have a little steel at $37. Possibly it would not be easy to secure prices of less than $37 on small lots, but on sizable tonnages there is a common impression that this price is merely a basis for negotiations rather than a real selling price. The most recent business in skelp was at 2c., but no tonnages of importance were involved. Makers of wire rods insist the market is holding at $46, base, Pittsburgh or Cleveland, but reports from consuming channels indicate a price as low as $45, Pittsburgh district mill. Prices are given on page 955.

Wire Products.—Fairly good business has been done since there was a clearing up in the confusion incident to the change from a Pittsburgh base to a mill base method of quoting. But nobody claims that business really is good or that any difficulty is experienced in meeting all demands. Leading independent producers are meeting the prices established by the leading interest, notwithstanding that this means pretty heavy absorption of freight, particularly into the Chicago district. Prices are given on page 954.

Steel Rails.—Only a limited demand is reported for light rails. On small lots, 1.85c. to 1.90c., base, mill, is representative of the market, but worth while lots would probably bring out lower quotations on rails rolled from billets. Prices are given on page 955.

Tubular Goods.—Business in steel pipe has been helped to some extent by the prompt adjustment as to the change from a Pittsburgh base method of quoting to a mill base, but as this change is more helpful to Western than Eastern distributors and the chief movement to the West is in oil country pipe, demand for which is affected more by conditions in that industry than by the price of the pipe, the gain is not such as to occasion exultation. Merchant pipe is doing well, in keeping with the fact that consumption is good and jobbers find it necessary to replenish almost constantly. A local producer will furnish 45 miles of 10-in. line pipe for the Pan-American Petroleum Corporation, for export. About 5,000 tons is involved. This is the only line pipe business of any importance recently booked. The Reading Iron Co. still is quoting wrought iron pipe on a Pittsburgh f.o.b. basis. The A. M. Byers Co. is so situated as to plant locations as to be able to go along with the steel pipe basing method. Boiler tubes are as weak as ever and card discounts mean little with as many as 5 fives beyond being given to secure orders. Discounts are given on page 954.

Sheets.—Sheet business still has a tendency to blow hot and cold and lately it has blown in the latter direction. No doubt the unsettlement incident to the abandonment of Pittsburgh as a sole basing point has something to do with the quietness, but there is the other consideration that August orders were probably heavier than they would have been if there were not the price inducements that were part of the selling campaign of that month. Consumers are probably well covered against their immediate requirements. Operations of the leading interest are down from the recent rate and that also is true of the independent companies taken as a whole; the industry is probably averaging about 62 per cent of capacity operations this week. The September average of independents was about 70 per cent and of the American Sheet & Tin Plate Co. about 64 per cent. Long ternes used principally for automobile gasoline tanks, have responded to the recent drop in automobile body sheets with a decline of $1 per ton to 4.90c., base. This makes a drop of $8 a ton from the top prices of the year. Other finishes of sheets are holding about at recent levels. Prices are given on page 954.

Tin Plate.—Outside of the recent big order by the American Can Co., which went to the American Sheet & Tin Plate Co., new business is quiet. Mills in this district are averaging between 55 and 60 per cent of capacity, chiefly on specifications against contract busi-

ness. There is no change in the local price for domestic business, which still is $5.50 per base box, Pittsburgh district mills.

Hot-Rolled Flats.—Prices of hoops and bands are fairly well defined, but in wide material the struggle for orders still is sharp and prices are very irregular. Material rolled on jobbing or small plate mills still is competing with the product of the strip mill and prices are further confused by the equalization of freight by mills in one district with those in another. Prices are given on page 954.

Cold-Rolled Strips.—Producers in this district are quoting 4c. base, mill, and are equalizing freight with mills having an advantage in this respect only when it is necessary to hold a desirable account. Local makers are also giving careful consideration as to the extent of the competition they must meet on the Cleveland and Worcester, Mass., bases. The capacity of the American Steel & Wire Co. at Worcester has been considerably exaggerated in some published statements. Prices are given on page 954.

Bolts, Nuts and Rivets.—Makers in this district, in common with those in other producing centers, recently had a rush of specifications against unshipped orders placed for third quarter delivery, this to escape the higher prices now in effect. It is admitted, however, that the test of current quotations is still to be met. Prices and discounts are given on page 954.

Iron and Steel Bars.—While there are occasional sales of soft steel bars at 2.10c. base from Pittsburgh district mills, that price largely has disappeared and even the small lot buyers not infrequently are able to cover their requirements at 2c. The Carnegie Steel Co. appears to have a good order book, as it is running its Duquesne and McDonald mills at close to capacity. Other companies are not so well situated, however, and that explains the weaker tendency in prices. Local makers of iron bars still are holding to 2.90c. base for refined grade, and a fair volume of business is being done at that price. Prices are given on page 954.

Plates.—Competition for business still is rather sharp in this product and prices favor buyers. The common asking price is 1.90c. base at Pittsburgh district mills, but only small tonnages are moving at that figure, larger lots bringing out quotations of 1.85c. and 1.80c. Prices are given on page 954.

Structural Material.—Lull in fabricated steel business finds reflection in demand for plain material. The common quotation of Pittsburgh mills is 2c. base for large structural shapes, but that price is not "good" except in the area where Pittsburgh mills have a freight advantage over outside mills. Most fabricating shops in this district are completing old orders more rapidly than new ones are being received. Plain material prices are given on page 954.

Cold-Finished Steel Bars and Shafting.—Local makers are becoming reconciled to the additional price bases and not disposed to be greatly disturbed by the fact that Cleveland has the same base price as Pittsburgh. Local mills are equalizing freights with the Cleveland producer; they previously had been doing this with Chicago district producers in competitive territory. Change from a Pittsburgh to a mill base on this product is largely an established fact. Ground shafting has been reduced $2 per ton to a base of 3.10c., base, f.o.b. mill for lots of a carload or more.

Track Supplies.—The American Steel & Wire Co. has set up a base of $3 Cleveland district mill for small spikes and local makers are now down to that base at mill in this district, for fair-sized lots, still having a quotation of $3.10 base, per 100 lb. for small lots. Large spikes now are quoted by Pittsburgh markers at $2.70, base, per 100 lb. for fair sized lots and $2.80 for small lots. Increase in coal mine operations has brought some increase in the demand for small spikes, but activity is lacking in the larger ones and in other railroad track supplies. Prices are given on page 954.

Coke and Coal.—The situation does not change much. There seems to be an ample supply of furnace coke for all requirements and, while there are sales as high as $3.10 and $3.15 per net ton ovens for coke for water gas plants and other non-metallurgical purposes, $3 is still the prevailing price for coke for blast furnace use. Foundry coke ranges from $4 to $4.50 for a general run of offerings, but as much as $1 per ton more is being paid for special brands. The coal market still shows a fair degree of activity, but prices are not helped thereby. There is an oversupply of slack grade and steam slack is easily obtained at $1 per net ton at mines and there is more business in gas slack at $1.15 than at $1.25, the price named by some producers. Mine run steam coal is quotable from $1.50 to $2.10, mine run coking coal from $1.60 to $1.85 and gas grade from $2 to $2.25.

Old Materials.—There is no occasion to materially change prices from those of a week ago. Mill buying is almost nil and there is not a great deal of interest in those grades going to foundries of special uses. Heavy melting steel cannot be sold today at more than $18.50 and dealers, who are the principal buyers just now, are not in all cases willing to go that high. On lots that have to be moved to save demurrage, even $18 is hard to obtain. That in face of reports that the Pennsylvania Railroad received $19 or more for the heavy melting steel scrap offered in its September list.

We quote for delivery to consumers' mill in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

	Per Gross Ton	
Heavy melting steel	$18.00 to	$18.50
No. 1 cast, cupola size	18.00 to	18.50
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa.	19.00 to	19.50
Compressed sheet steel	16.50 to	17.00
Bundled sheets, sides and ends	15.00 to	15.50
Railroad knuckles and couplers	21.00 to	21.50
Railroad coil and leaf spring	21.00 to	21.50
Low phosphorus blooms and billet ends	23.00 to	23.50
Low phosphorus plate and other material	22.00 to	22.50
Railroad malleable	16.50 to	17.00
Steel car axles	22.00 to	22.50
Cast iron wheels	18.50 to	19.00
Rolled steel wheels	21.00 to	22.00
Machine shop turnings	14.50 to	15.00
Sheet bar crops	21.00 to	21.50
Heavy steel axle turnings	15.50 to	16.00
Short shoveling turnings		15.00
Heavy breakable cast	16.00 to	16.50
Stove plate	15.00 to	15.50
Cast iron borings		15.00
No. 1 railroad wrought	15.50 to	16.00
No. 2 railroad wrought	18.00 to	18.50

Youngstown Companies Figuring on Freight Adjustments

YOUNGSTOWN, Oct. 7.—For the time being suggested independent steel company mergers appear to be of secondary consideration with Youngstown interests, which are now engaged in working out freight rates which will be more advantageous to this district. New rates are being prepared for submission to the railroads and the Interstate Commerce Commission.

At a special meeting Tuesday afternoon, directors of the Youngstown Sheet & Tube Co. discussed the problems created by recent pricing developments, and the proposed expansion in finishing capacity in the Chicago district.

In the meantime, new business is coming to the Valley industry in a broader way, as consumers who held orders in check for a time are needing steel requirements. The aggregate of such business represents a sizable tonnage.

Officials of the Sharon Steel Hoop Co. have taken occasion to officially disclaim knowledge of any consolidation involving their company.

The problems precipitated by the "cease and desist" order from the chief concern of Valley independents, and the full time and energy of executives are being devoted to adjusting the position of the individual companies.

Chicago

Railroads and Automobile and Implement Companies Active in Market

CHICAGO, Oct. 7.—Railroad purchases of cars and rails, together with increased buying by the automobile and implement industries, have resulted in heavier commitments for local mills. An important local producer of plates, shapes, bars and rails has experienced the largest week in both new business and specifications since January, 1923. Prices are stiffening and an early advance in plates, shapes and bars would not be surprising. Mill operations continue to improve. A large independent is operating all of its sheet mills and its average production in all departments is close to 75 per cent. Another important interest has increased its output to over 60 per cent for the first time since early in the year. Seventeen blast furnaces remain active out of 34 steel works stacks in the district, but the early blowing in of an additional South Chicago furnace is looked for.

The market situation in wire products, sheets and pipe is becoming adjusted to the changes resulting from the abandonment of Pittsburgh basing. A few outside mills are meeting the new Chicago district prices, absorbing the difference in freight, but there still remain a considerable number of independents, particularly sheet mills, which have not yet determined finally what their policy will be.

Pig Iron.—Sales during the first week in October were at a better rate than in September. Shipments still exceed production and production in turn is heavier than sales. Continued apathy among melters is accounted for, in part by political uncertainty, which is a common reason for delaying purchases. It is doubtless also true that foundries still have considerable iron due them on contracts, in view of their slack operations throughout the summer. This is indicated by the improvement in shipments from furnaces. Inquiries are few, but one of them, from the Walworth Mfg. Co., Kewanee, Ill., is large, calling for 5500 tons of foundry and malleable. Another inquiry for several thousand tons has been put out by a producer of power and mining machinery with headquarters at New York, where orders are placed for all of its plants, which are scattered throughout the country. Prices on local iron are unchanged, but occasional concessions are made in intermediate territories where the competition outside of producing centers is encountered. Sales of Southern foundry are small and usually cover the higher silicon grades. A Michigan melter has closed for 250 tons of Southern at $17.50 base Birmingham. A fair tonnage of charcoal has been placed in this district in lots ranging from 100 to 350 tons. An Eastern locomotive company has purchased 600 tons of charcoal and another Eastern railroad equipment maker is inquiring for 1500 tons. The trade is interested in changes in pig iron freight rates, some of which have been made and others still in the prospective stage. Effective Nov. 1, freight rates on pig iron from Chicago and St. Louis to Omaha, Kansas City and other Missouri River crossings will be reduced 50c. per gross ton. The Zenith Furnace at Duluth was blown in last week. The stack was relined and equipped with a pig-casting machine.

Quotations on Northern foundry, high phosphorus, malleable and basic iron are f.o.b. local furnaces and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards.

Northern No. 2 foundry, sil. 1.75 to 2.25	$20.50 to $21.00
Northern No. 1 foundry, sil. 2.25 to 2.75	21.00 to 21.50
Malleable, not over 2.25 sil.	20.50 to 21.00
Basic	20.50
High phosphorus	20.50
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	29.04
Southern No. 2 (barge and rail)	22.18
Southern No. 2, sil. 1.75 to 2.25	23.51 to 24.01
Low phos., sil. 1 to 2 per cent, copper free	31.79
Silvery, sil. 8 per cent	34.29 to 35.29
Electric ferrosilicon, 14 to 16 per cent	43.42

Ferroalloys.—A number of recent sales of ferromanganese cover the requirements of purchaser over the remainder of the year. A general advance to $100 seaboard is looked for. An Ohio furnace is offering spiegeleisen at $35, furnace, or $39.79, delivered Chicago. Foreign material is available at from $32 to $33, New Orleans. Sales of spiegeleisen have been confined to small lots.

We quote 80 per cent ferromanganese, $102.56, delivered; 50 per cent ferrosilicon, $75, delivered; spiegeleisen, 18 to 22 per cent, $39.56 to $39.71, delivered.

Plates.—Local mills continue to book large orders for plates, shapes and bars required for railroad rolling stock recently purchased. Oil storage tank construction is also a source of plate business, although there are few large individual tank awards. The Champlin Oil Co. has placed four tanks, 1200 tons, for construction at Enid, Okla., to the Chicago Bridge & Iron Works. In view of heavy mill bookings, local prices on plates, shapes and bars are stronger and an early advance is expected by some observers.

The mill quotation is 2c. to 2.15c., Chicago. Jobbers quote 3.10c. for plates out of stock.

Structural Material.—Fabricating awards for the week were numerous and notwithstanding the absence of large individual lettings, aggregate nearly 9000 tons. Foremost among fresh projects is the South Water Street improvement work in this city, 14,000 tons, bids on which are to be taken shortly. A proposed 15-mile extension of the Chicago Elevated Railways will also require a large tonnage, although it is not expected to reach the figuring stage for several months. Plain material is stronger, but the appended quotations still represent the range of going prices.

The mill quotation on plain material is 2c. to 2.15c., Chicago. Jobbers quote 3.10c. for plain material out of warehouse.

Wire Products.—While a number of mills east of here are absorbing freight into this territory to meet the new Chicago delivered and Chicago district mill prices, this action appears to be limited to companies which wish to hold their established Western trade pending the construction of plants in this section. Mill bookings continue to show steady expansion and production probably averages 60 per cent. Mill prices are shown on page 954. Warehouse prices show considerable variation, some of them being higher than the minimum quotations named below.

We quote warehouse prices f.o.b. Chicago: No. 8 black annealed, $3.05 per 100 lb.; common wire nails, $3.15 per 100 lb.; cement coated nails, $2.40 per keg.

Bars.—Mill commitments in soft steel bars continue to increase and prices, although unchanged, are stronger. The automotive and farm implement industries are heavier buyers, as are also most other classes of consumers. Demand for bar iron is, however, not yet heavy enough to warrant better than intermittent mill operations. This commodity is quoted at 2.10c. to 2.15c., Chicago. As a result of heavier bookings in rail steel bars, a Chicago Heights mill has just gone on double turn. Rail steel is fairly steady at 2c., mill, although occasional concessions below that figure have been reported.

Mill prices are: Mild steel bars, 2c. to 2.10c.; common bar iron, 2.10c. to 2.15c., Chicago; rail steel, 2c., Chicago mill.

Jobbers quote 3c. for steel bars out of warehouse. The warehouse quotations on cold-rolled steel bars and shafting are 3.80c. for rounds and 4.30c. for flats, squares and hexagons; 4.15c. for hoops and 3.65c. for bands.

Jobbers quote hard and medium deformed steel bars at 2.15c.

Rails and Track Supplies.—The Chicago Great Western has ordered 7000 tons of rails from local mills. The Chesapeake & Ohio is inquiring for 30,000 tons in addition to the tonnage which it recently placed.

Standard Bessemer and open-hearth rails, $43; light rails, rolled from billets, 1.80c. to 1.90c., f.o.b. makers' mill.

Standard railroad spikes, 2.80c. to 3c. mill; track bolts with square nuts, 3.80c. to 4c. mill; steel tie plates, 2.45c., f.o.b. mill; angle bars, 2.75c., f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.45c. base, and track bolts, 4.45c. base.

Bolts, Nuts and Rivets.—As the trade is well aware, bolts and nuts have been on a Chicago base for fully two years. Heretofore, however, this base has been limited to the commoner products while specialties

produced largely in the East continued to command a Pittsburgh base price. Under the new order of things, all forms of bolts and nuts are quoted at prices, f.o.b. Chicago, which are identical with the quotations f.o.b. Pittsburgh. This is the only significant change which has followed the abandonment of Pittsburgh plus in other commodities, such as wire products and sheets. The Chicago base prices on bolts and nuts will continue to hold sway in that part of the country where the freight is favorable to Chicago, a territory roughly bounded on the East by a North and South line through the Indiana-Ohio boundary and on the West by a North and South line through Denver. Chicago prices on large rivets will continue to be $3 a ton above the ruling quotations at Pittsburgh, or $2.75 per 100 lb. Small rivets are 70 and 10 off, Chicago, as compared with 70 and 10 and 5 off at Pittsburgh. Specifications against fourth quarter contracts for bolts and nuts are not yet heavy, but prices are firm.

Jobbers quote structural rivets, 3.65c.; boiler rivets, 3.85c.; machine bolts up to ⅞ x 4 in., 60 per cent off; larger sizes, 60 off; carriage bolts up to ⅞ x 6 in., 55 off; larger sizes, 55 off; hot pressed nuts, squares and hexagons, tapped, $4 off; blank nuts, $4 off; coach or lag screws, gimlet points, square head, 65 per cent off.

Steel Pipe.—The new Chicago delivered prices recently announced by the Youngstown Sheet & Tube Co. represent a reduction of approximately $1.80 a ton from the delivered prices as figured from the former Pittsburgh base prices. From Lorain, Ohio, where the Steel Corporation has established base quotations equal to those at Pittsburgh, they represent a reduction of 80c. a ton, as the freight from Lorain is $1 less than from Pittsburgh. Consumers outside of Chicago who buy on the basis of prices f.o.b. Evanston, Ill., or Indiana Harbor, Ind., which are $4 a ton above the prices at Lorain and Pittsburgh, get a concession of approximately $1.80 a ton from delivered prices from Lorain. The Republic Iron & Steel Co. is meeting the new Chicago delivered and Chicago district mill prices and it is understood that most other producers will do likewise. The quotations apply only on lapweld and buttweld pipe. Demand for standard pipe in this district is good. While less building work is being undertaken, the price market will not be affected until construction work now under way approaches completion. For mill prices see page 954.

Cast Iron Pipe.—Chicago has placed 100 tons with National Cast Iron Pipe Co., and 570 tons with American Cast Iron Pipe Co. Detroit has awarded 100 tons of 6-in. to James B. Clow & Sons. The United States Cast Iron Pipe & Foundry Co. will furnish 300 tons and the National Cast Iron Pipe Co. 160 tons for Pittsfield, Ill. The National company will also supply 400 tons for Deshler, Ohio. Less new business is in sight and prices are unchanged.

We quote per net ton, f.o.b. Chicago, as follows: Water pipe, 4-in., $54.30 to $55.30; 6-in. and over, $50.20 to $51.20; Class A and gas pipe, $5 extra.

Hot-Rolled Strip.—This commodity is quoted at 2.50c. to 2.60c., Chicago.

Cold Rolled Steel Bars and Shafting.—The establishment of bases of 2.70c., mill, at both Cleveland and Pittsburgh by the American Steel & Wire Co. was at first interpreted as dictating a Chicago delivered price of 2.85c., or $3 a ton higher, the differential now obtaining on wire and nails, but independent manufacturers in the Chicago district who for some time have been quoting a Chicago base price equal to the base at Pittsburgh, have decided to continue that practice. Any attempt to maintain a higher base price here than at Cleveland and Pittsburgh would shut them out of one of the largest markets for cold rolled, namely Detroit. Cold-finished steel, therefore, remains unchanged at 2.70c., Chicago. Demand for this product is expanding not only in the Detroit district, but generally throughout the territory tributary to Chicago.

Reinforcing Bars.—Exclusive of the South Water Street improvement project, Chicago, which in itself will require a total of 7600 tons of reinforcing, pending work in this section aggregates fully 7000 tons. Buyers are still slow in placing orders, however, and their hesitancy is prompted, no doubt, by continued instability of prices. Material for mill shipment has been placed as low as 2c., Chicago, while steel from store is not bringing over 2.15c., Chicago warehouse.

Lettings include:

Jackson Tower Building, Chicago, 750 tons of rail steel to Inland Steel Co.

Pending work includes:

Jewelers Building, Chicago, 500 tons, general contract awarded to Starrett Brothers, bids on reinforcing steel to be taken Oct. 15.

Furniture and office building, Springfield, Ill., 200 tons, Alfred S. Alschuler, architect, Chicago.

Edward Keogh Printing Co., plant and office building, Chicago, 200 tons.

Sheets.—One important Ohio mill is meeting the new Chicago delivered and Chicago district mill prices in quoting to its established trade, and it is understood that other outside producers are seriously considering doing likewise. It would appear that such action will be limited to those companies which wish to hold their Western business pending the construction of mills in this section. No one, however, expects outside mills to continue to absorb freight into the Chicago district after Western mills are filled up. If, as is commonly believed, Western capacity falls short of supplying Western demand, buyers will be forced to turn to producers east of here for their surplus supplies which, no doubt, will cost them whatever may be the ruling market prices at the time. In this connection, it may be significant that the local independent has accumulated a substantial backlog and is now operating at capacity. Possibly because of apprehension that Chicago base prices will prove short-lived, lasting only until Western capacity is engaged, local jobbers have not yet made any change in their warehouse quotations.

Chicago delivered prices from mill are 3.65c. for No. 28 black, 2.85c. for No. 10 blue annealed, 4.75c. for No. 28 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Jobbers quote f.o.b. Chicago: 3.80c. base for blue annealed, 4.50c. base for black, and 5.50c. base for galvanized.

Old Material.—Consumer buying is light and such purchases as have been made have brought out concessions. The leading steel producer purchased a relatively small tonnage of heavy melting at $16.25 delivered, while the leading independent mill bought a few thousand tons at $16.50 delivered. An iron mill closed for a quantity of No. 1 busheling at $12.50 per net ton delivered, or 50c. below the previous maximum. Transactions among dealers have also consistently reflected weakness. The trade is frankly disturbed by political uncertainty. Railroad lists include the Wabash, 8400 tons; the Chicago & Eastern Illinois, 1000 tons, and the Chesapeake & Ohio, 400 tons.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

	Per Gross Ton	
Iron rails	$18.00 to	$18.50
Cast iron car wheels	18.00 to	18.50
Relaying rails, 56 and 60 lb.	26.00 to	27.00
Relaying rails, 65 lb. and heavier	27.00 to	32.00
Forged steel car wheels	18.50 to	19.00
Railroad tires, charging box size	18.50 to	19.00
Railroad leaf springs, cut apart	18.50 to	19.00
Rails for rolling	17.00 to	17.50
Steel rails, less than 3 ft.	18.00 to	18.50
Heavy melting steel	16.00 to	16.50
Frogs, switches and guards cut apart	16.50 to	17.00
Shoveling steel	15.75 to	16.25
Drop forge flashings	12.00 to	12.50
Hydraulic compressed sheets	13.00 to	13.50
Axle turnings	13.50 to	14.00
Steel angle bars	17.00 to	17.50
Steel knuckles and couplers	18.50 to	19.00
Coil springs	19.50 to	20.00
Low phos. punchings	17.00 to	17.50
Machine shop turnings	9.00 to	9.50
Cast borings	11.50 to	12.00
Short shoveling turnings	11.50 to	12.00
Railroad malleable	18.00 to	18.50
Agricultural malleable	17.00 to	17.50
	Per Net Ton	
Iron angle and splice bars	17.50 to	18.00
Iron arch bars and transoms	18.50 to	19.00
Iron car axles	24.50 to	25.00
Steel car axles	18.00 to	18.50
No. 1 busheling	12.00 to	12.50
No. 2 busheling	8.50 to	9.00
Pipes and flues	11.00 to	11.50
No. 1 railroad wrought	14.50 to	15.00
No. 2 railroad wrought	14.25 to	14.75
No. 1 machinery cast	17.50 to	18.00
No. 1 railroad cast	16.00 to	16.50
No. 1 agricultural cast	16.00 to	16.50
Locomotive tires, smooth	16.50 to	17.00
Stove plate	14.50 to	15.00
Grate bars	14.50 to	15.00
Brake shoes	15.00 to	15.50

New York

Brooklyn Subway Calls for 9000 Tons—Increased Demand for Sheets

NEW YORK, Oct. 7.—Steel business is holding its own and possibly is gaining a bit in this district over the September rate. Demand for sheets has improved and tin plate is strong. Low prices quoted on fabricated steel work are bringing out more work than might ordinarily be expected at this season. Plates continue as the impoverished branch of the steel trade, neither volume of buying nor prices showing any tendency to improve. Railroad buying of cars is active and further inquiries have appeared. Aside from a few structural projects of size, the car purchases of railroads furnish about the only large tonnages on which mills can figure, but the buying of such steel has benefited mills from Pittsburgh west more than it has the Eastern companies. The price situation on finished steel shows no change, plates being available at 1.60c. to 1.65c.; structural shapes at 1.85c. to 1.90c. and steel bars at 2c., all Pittsburgh basis. Sheets are slightly firmer, but not higher in price. Tin plate and pipe continue the outstanding exceptions in the generally weak price situation. The New York Central took bids last week on its fourth quarter steel requirements, 3000 to 5000 tons of plates, shapes and bars, and smaller amounts of wire products, axles, billets and other products. On plates bids of 1.90c., Chicago, Youngstown or West Seneca, N. Y., were submitted by different companies, this price being the lowest. One company bid 1.90c., West Seneca, on plates, shapes and bars. The most important new project up for bids is Brooklyn subway work, which will require 9000 tons of steel.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.34c. to 2.44c.; plates, 1.94c. to 2.04c.; structural shapes, 2.24c. to 2.34c.; bar iron, 2.34c.

Pig Iron.—Sales in this territory the past week were light and probably did not aggregate over 7000 or 8000 tons. The inquiry of the Worthington Pump & Machinery Corporation for 4785 tons is still pending, but will probably be placed in a day or two. Another important melter is in the market for 5700 tons of No. 2 plain and 350 tons of No. 2X for its Bayonne plant for fourth quarter delivery. The Eastern Malleable Iron Co., Naugatuck, Conn., is in the market for 1000 to 1500 tons of Virginia iron, also for fourth quarter. A New Jersey company is in the market for 100 to 150 tons for prompt delivery and another New Jersey company for 100 tons for prompt delivery. Nearly all the tonnage recently placed or pending is for the remainder of this year and very little interest is being shown by either buyers or sellers for first quarter of 1925. Prices show little change, but there is some weakness in No. 2 plain in Buffalo, where $19 has been shaded, but recent quotations prevail on the higher silicons.

We quote delivered in the New York district as follows, having added to furnace price $2.27 freight from eastern Pennsylvania, $4.91 from Buffalo and $5.44 from Virginia:

East. Pa. No. 2, sil. 1.75 to 2.25	$22.27 to $22.77
East. Pa. No. 1X fdy., sil. 2.75 to 3.25	23.27 to 23.77
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	22.77 to 23.27
Buffalo, sil. 1.75 to 2.25	23.41 to 23.91
No. 2 Virginia, sil. 1.75 to 2.25	29.94 to 30.44

Ferroalloys.—A moderate business has been done in ferromanganese, consisting of several 100-ton and smaller lots, all at $95, seaboard. Estimates of the total sales vary between 500 to 1000 tons. There is only a moderate amount of inquiry. Sales of spiegeleisen have been less than those of ferromanganese and have consisted only of small lots to cover nearby needs. There has been no change in quotations.

Warehouse Business.—September was a lighter month for business than August. Prices are unchanged but weak. Jobbers seem to expect a change in prices as a result of the elimination of the Pittsburgh base on mill prices, but as yet this change has made no material difference in the mill price delivered New York. A new schedule of discounts on wrought iron and steel pipe will probably be announced soon by warehouses in this district. Manufacturers of bolts have made an increase of about 10 per cent in prices. Sellers of high carbon and high speed steel report a slight improvement in demand. Black sheets continue weak, concessions being reported of as much as 20c. per 100 lb. from the 4.60c. per lb. base. Galvanized are considerably stronger but slight concessions have also been made in some cases. In practically all products there is considerable business being transacted between warehouses, stocks evidently running low on some sizes. We quote prices on page 976.

Cast Iron Pipe.—A fairly active demand continues with several municipal inquiries for water pipe attracting the attention of sellers. Bids will be opened Oct. 14 and 15 on two contracts, totaling between 700 and 800 tons of 6 to 12-in. pipe involved in contracts to be let by the Department of Water Supply, Gas and Electricity, City of New York. We quote per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, $56.60 to $57.60; 4-in. and 5-in., $61.60 to $62.60; 3-in., $71.60 to $72.60, with $5 additional for Class A and gas pipe. The soil pipe market is still in considerable confusion on prices. Concessions of several points are being made by many producers, so that it is difficult to establish the bottom of the current market. Reported sales to consumers in Porto Rico and Cuba show an even wider departure from the quoted schedule than in the domestic business. Recent sales to these markets are said to have been made at 60 per cent off list on 6-in. light and 70 per cent off on heavy pipe. We quote discounts of both Northern and Southern makers, f.o.b. New York, as follows: 6-in., 48 to 50 per cent off list; heavy, 58 to 60 per cent off list.

Coke.—Distress tonnages of foundry and furnace coke are available at concessions in price. Standard foundry is quotable at $4.25 to $4.75 per ton and standard furnace at $3.25 to $3.50 per ton with sales of furnace at as low as $3.10 per ton. A West Virginia producer of by-product coke is reported to have increased prices on screened sizes, 50c. per ton. By-product in this district is unchanged at $10.41, Newark and Jersey City, N.J.

Old Material.—Except for heavy melting steel, which is weak, the market on practically all grades is unchanged. No. 1 heavy melting steel of railroad quality is weak. A contributing factor to this condition is apparently the continued suspension of shipments by certain eastern Pennsylvania consumers, for whom $17 to $17.50 per ton delivered was being paid by brokers. As a result, the top price today is about $16.50 per ton and some brokers are offering only $16 per ton delivered.

Buying prices per gross ton New York follow:

Heavy melting steel, yard	$12.50 to $13.00
Heavy melting steel, railroad or equivalent	13.50 to 14.00
Rails for rolling	14.50 to 15.00
Relaying rails, nominal	24.00 to 25.00
Steel car axles	19.00 to 19.50
Iron car axles	26.00 to 28.00
No. 1 railroad wrought	14.50 to 15.00
Forge fire	10.00 to 10.50
No. 1 yard wrought, long	13.50 to 14.00
Cast borings (clean)	9.75 to 10.25
Machine shop turnings	9.75 to 10.25
Mixed borings and turnings	9.75 to 10.25
Iron and steel pipe (1 in. diam., not under 2 ft. long)	11.75 to 12.25
Stove plate	11.50 to 12.50
Locomotive grate bars	11.50 to 12.50
Malleable cast (railroad)	14.00 to 14.50
Cast iron car wheels	14.50 to 15.00
No. 1 heavy breakable cast	12.00 to 12.50

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	$16.00 to $16.50
No. 1 heavy cast (columns, building materials, etc.), cupola size	14.00 to 14.50
No. 2 cast (radiators, cast boilers, etc.)	13.00 to 13.50

Detroit Scrap Market

DETROIT, Oct. 7.—Melting conditions in the district about the same as during the month of September, with stove furnace and radiator manufacturers operating at near capacity. Malleable plants in the district which are more or less dependent upon automotive tonnage are operating at less than 50 per cent. There is no change in prices.

Buffalo

More Inquiry for Pig Iron—New Methods of Quoting Finished Products

Pig Iron.—More interest is noticeable in pig iron buying with a total inquiry this week of about 20,000 tons, all for early shipment. The principal inquiry was the Worthington Pump for 7500 tons in all, of which 2650 tons is to be for the Buffalo plant. An inquiry from New England is for 2000 tons of foundry iron and a Western user seeks 600 tons of foundry. One malleable inquiry is for 500 tons and several are for lesser amounts. It is believed that the Gould Coupler Co. which last week wanted to buy 2000 tons of malleable has placed its contract for this iron with a Buffalo maker at less than $19.50. Furnacemen say that the stock of piled iron is being cut into by the present selling. The price is about on the same par as last week with furnaces attempting to make $19.50 the base, but dipping here and there on desirable tonnage to less than this figure. The furnace operation for the district remains at 50 per cent.

We quote prices f.o.b. gross ton, Buffalo, as follows:

No. 2 plain, sil. 1.75 to 2.25	$18.50 to $19.00
No. 1 foundry, sil. 2.75 to 3.25	20.00 to 21.00
No. 2 foundry, sil. 2.25 to 2.75	19.00 to 19.50
Malleable, sil. up to 2.25	19.00 to 19.50
Basic	19.00 to 19.50
Lake Superior charcoal	29.28

Warehouse Business.—The demand has improved a little and warehouses feel that, at least, they are not losing ground. Structural business has been best. Sheets are not very active, especially high finishes and black. Heavy sheets are fair. Prices remain unchanged.

Finished Iron and Steel.—While most of the mills are quoting a delivered price on district business, which means the Pittsburgh price plus freight, some instances of Buffalo basing having occurred during the week. On desirable bar business, a price of 2.10c., Buffalo, was made. This is 10c. higher than the Pittsburgh price on desirable business. By next week official announcements are expected by local sales agencies for outside mills on what bar price to quote. This also applies to sheets. Seneca Iron & Steel Co., sheetmaker, is quoting a delivered price with freight allowed. Possibly in view of the belief held by some users of steel that the abolition of Pittsburgh plus is going to mean a lower price for them, business during the past couple of weeks has not been active, though the present week's totals exceeded the past week's. Buffalo users of pipe buying from a Youngstown maker will have their prices based in the future on Lorain, Ohio, which just now is the same as Pittsburgh. However, all points east of Buffalo will continue on the Pittsburgh base, this being more advantageous to them than the Lorain base. Sheets (galvanized) are weak at 4.60c. but the black price of 3.50c. is being fairly well maintained. Bolt prices are holding up well and better business is expected shortly. Fabricated business has fallen off. A considerable volume of small business is being offered, but large inquiries are rare. Taken generally, however, the business done by structural fabricators of this district throughout the summer has been good.

Steel bars, 3.30c.; iron bars, 3.35c.; reinforcing bars, 3.30c.; structural shapes, 3.40c.; plates, 3.40c.; No. 10 blue sheets, 4.05c.; No. 28 black sheets, 4.75c.; No. 28 galvanized sheets, 5.85c.; bands, 4.05c.; hoops, 4.40c.; cold finished rounds, 4.20c.; cold-finished shapes, 4.70c.

Old Material.—In sympathy with the market of Youngstown and Pittsburgh, the local market has fallen back, following the rather substantial buying movement of two weeks ago. The mills are not doing any large buying, apparently being covered for the near future at the present rate of operation. All the mills are on a better plane of operation than two weeks ago, with the average somewhere around 50 to 60 per cent. Dealers are not so active, only those fortunate enough to have sold recently being in the market for material. The heavy melting steel market at present is $16.50 to $17.50, with several of the other commodities off about 50c. to 75c. a ton. That the selling of the past couple of weeks was substantial is shown by the fact that one interest bought between 30,000 and 40,000 tons of heavy melting steel and No. 1 busheling.

We quote f.o.b. gross ton, Buffalo, as follows:

Heavy melting steel	$16.50 to $17.50
Low phosphorus, 0.04 and under	19.50 to 20.00
No. 1 railroad wrought	15.00 to 15.50
Car wheels	15.50 to 16.00
Machine shop turnings	11.50 to 12.50
Cast iron borings	12.00 to 12.50
No. 1 busheling	15.00 to 15.50
Stove plate	15.50 to 16.00
Grate bars	14.50 to 15.00
Bundled sheets	12.00 to 12.50
Hydraulic compressed	15.50 to 16.50
Railroad malleable	17.00 to 17.50
No. 1 machinery cast	17.00 to 17.50

Birmingham

Pig Iron Sales Confined to Small Lots—Pipe Business Active

BIRMINGHAM, ALA., Oct. 7.—Selling of pig iron by Southern furnace companies continues, with orders not as small as recently, but no large tonnages are reported. Aggregate sales are above the production and sellers believe that every ton of the probable make for the rest of the year, at the present rate, will be delivered and a considerable portion of the surplus 80,000 tons also used. The quotations have hardened. The local melt of iron is steadily improving. Reiteration is heard as to declination of business for 1925 at present quotations for pig iron.

We quote per gross ton, f.o.b. Birmingham district furnace, as follows:

No. 2 foundry, 1.75 to 2.25 sil.	$17.50 to $18.00
No. 1 foundry, 2.25 to 2.75 sil.	18.00 to 18.50
Basic	18.50 to 19.00
Charcoal, warm blast	30.00 to 31.00

Cast Iron Pipe.—With lettings already in hand and in sight to carry operations through the rest of the year, and winter buying promising to be good, there will be warrant for steady operation of plants to the period when early spring buying starts in. Quotations for cast iron pipe are: 4-in., $48; 6-in. and over, $44.

Steel.—Production continues good in this district, about the same pace as has been noted for several weeks, with the Tennessee Coal, Iron & Railroad Co. near capacity and the Gulf States Steel Co. 50 per cent in open-hearth department and 80 per cent in finishing mills. While much is being said elsewhere as to the Pittsburgh plus situation, very little is heard here, the consumers offering no comments. It is apparent that very little change in the conditions in this district will follow the new order of things as to Pittsburgh basing. Steel fabricating plants in the Birmingham district report that they are receiving some business and that prospects are bright. Soft steel bars are quoted at 2.35c., Birmingham.

Coke.—The coke market in the Birmingham district continues unchanged. Quotations are from $4.50 to $5 for furnace and foundry coke, beehive coke producers asking $5 and $5.25 for their product.

Old Material.—No changes have taken place in the old material quotation in the Birmingham district and dealers are attempting to increase their stock. Heavy melting steel is lagging.

We quote per gross ton f.o.b. Birmingham district yards as follows:

Cast iron borings, chemical	$15.00 to $16.00
Heavy melting steel	13.50 to 13.00
Railroad wrought	12.00 to 13.00
Steel axles	17.00 to 18.00
Iron axles	19.00 to 19.50
Steel rails	12.50 to 13.00
No. 1 cast	14.00 to 15.00
Tram car wheels	15.00 to 16.00
Car wheels	14.00 to 15.00
Stove plate	13.50 to 14.00
Machine shop turnings	6.00 to 7.00
Cast iron borings	7.00 to 8.00
Rails for rolling	15.00 to 16.00

The Bethlehem Steel Corporation has started up its rail mill at Sparrows Point, Md., which for the most part has been idle for several years. Orders on hand will permit of a 50 per cent operation for the remainder of the year.

Boston

Pig Iron More Active While Demand for Scrap Falls Off

BOSTON, Oct. 7.—The inquiry for several thousand tons of No. 3, No. 2X and No. 1X by a Massachusetts cotton machinery maker, the inquiry for 1,000 tons No. 2X by a woolen machinery maker, and the sale of several 200 and 300 ton lots have given the pig iron market a more active appearance. Details regarding the first inquiry are lacking, but the trade assumes 10,000 tons will be purchased. More than half of that amount already has been taken, one Buffalo furnace securing 2,500 tons, at private terms. For No. 3, the company paid less than $19 Buffalo furnace, according to unconfirmed report, presumably $18.50; for No. 2X, $19.50, and for No. 1X, $20.50. It is said to have turned down an offer of $18.50 furnace for No. 3 iron running rather high in sulphur, and $23 delivered for No. 2X and No. 1X India iron. The 1,000-ton No. 2X inquiry will not result in purchase unless the price is sufficiently low to attract the buyer. The company is willing to accept 1925 delivery; has just laid off an additional 450 men; and on its present basis of operation has sufficient iron on hand and on order to last a year or more. Round tonnages of Buffalo No. 1X sold the past week to Massachusetts consumers at $21 furnace, and of Pennsylvania No. 2X at $21, and No. 1X at $21.50, last quarter delivery. Charcoal iron is moving more freely in car lots at $26 furnace base. The report that New Hampshire foundries are inquiring on 5,000 to 7,000 tons of iron cannot be verified. New Hampshire usually does not consume much more than that amount annually. In the past week, 104 tons of India iron were landed at this port.

We quote delivered prices on the basis of the latest reported sales as follows, having added $3.65 freight from eastern Pennsylvania, $4.91 from Buffalo, $5.92 from Virginia and $9.60 from Alabama:

East. Penn., sil. 1.75 to 2.25	$23.65 to $25.15
East. Penn., sil. 2.25 to 2.75	24.15 to 25.15
Buffalo, sil. 1.75 to 2.25	23.91 to 24.41
Buffalo, sil. 2.25 to 2.75	24.41 to 24.91
Virginia, sil. 1.75 to 2.25	29.42 to 29.92
Virginia, sil. 2.25 to 2.75	29.92 to 30.42
Alabama, sil. 1.75 to 2.25	27.10 to 27.60
Alabama, sil. 2.25 to 2.75	27.60 to 28.10

Plates and Shapes.—The structural steel market is gradually growing more active, although individual tonnages coming on the market usually are for less than 500 tons. Shapes are quoted $2.26½ per 100 lb. delivered, on attractive tonnages and $2.36½ on the ordinary run of business. On large tonnages of plates 1.65c. mill plus the freight can be done, but on small lots mills are endeavoring to secure 1.75c. mill plus the freight.

Coke.—Most local brokers report September specifications against by-product foundry coke contracts as slightly under those for August. October is starting off much more active, however, some foundries not only consuming more fuel weekly, but taking on stock for winter storage. Based on the first week's specifications, the movement of coke from ovens to foundries this month should increase 50 to 75 per cent. Both the New England Coal & Coke Co. and the Providence Gas Co. continue to quote by-product foundry coke at $11.50 a ton delivered in New England. Virtually no interest is shown in Connellsville and other outside foundry cokes. New England coke makers are enjoying an active run on domestic fuel, the price of which compares very favorably with that for anthracite coal.

Old Material.—General sentiment among brokers is that the market is easier due to price concessions in the Pittsburgh district. Prices paid for old material in this market the past week, with the exception of those for heavy melting steel, disclose no weakness, however. For heavy melting steel, $12.50 on cars unquestionably is the top of the market, whereas a week ago prices ranged up to $13. Turnings and borings are the most active items in the market notwithstanding a scarcity. Some activity is reported in rerolling rails at and around $13.75 on cars, round tonnages changing hands, and in scrap rails at $12 and $12.50 on cars. A New England consumer is buying shafting at $22 delivered, or about $19.50 on cars here. On material for local consumption, the market unquestionably is weaker. Dealers here cannot do better than $19 on No. 1 machinery cast today, contrasted with $20 a fortnight ago. Stove plate is a drug on the market. Prices are easily $1

The following prices are for gross ton lots delivered consuming points:

No. 1 machinery cast	$18.00 to $18.50
No. 2 machinery cast	15.00 to 16.00
Stove plates	14.00 to 14.50
Railroad malleable	17.00 to 17.50

The following prices are offered per gross ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	$12.00 to $12.50
No. 1 railroad wrought	13.00 to 13.50
No. 1 yard wrought	12.00 to 12.50
Wrought pipe (1-in. in diam., over 2 ft. long)	11.50 to 12.00
Machine shop turnings	9.00 to 9.50
Cast iron borings, chemical	11.00 to 12.00
Cast iron borings, rolling mill	9.00 to 9.25
Blast furnace borings and turnings	9.00 to 9.25
Forged scrap and bundled skeleton	9.00 to 9.50
Shafting	18.00 to 19.00
Street car axles	18.00 to 19.00
Rails for rolling	13.50 to 14.00

St. Louis

Wabash Railway in Market for 15,000 Tons of 90-lb. Rails—Pig Iron Dull

ST. LOUIS, Oct. 7.—The market for pig iron continues dull. The business of melters is still spotty, but even those who are busy are inclined to buy only when they actually require the iron. The season's first inquiry for first quarter delivery is now before the market, being for 500 tons of 3.25 to 4.25 sil. for a St. Louis melter. A Texas melter is in the market for 500 tons of charcoal iron, a Louisville melter wants 300 tons of foundry iron and a Kansas City melter is in the market for 200 tons of foundry, the three latter being for prompt shipment. The St. Louis Coke & Iron Co. sold between 4000 and 5000 tons during the last week, of which 2000 tons of basic went to one St. Louis district melter and 1000 tons to another. The largest foundry iron sale was for 600 tons to a St. Louis concern. Carloads constituted the remainder of the orders. Quotations are unchanged and nominal, each transaction being the result of negotiations.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices $2.16 freight from Chicago, $3.28 from Florence and Sheffield (rail and water), $5.17 from Birmingham, all rail, and 81c. average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25	$23.16
Northern malleable, sil. 1.75 to 2.25	23.16
Basic	23.16
Southern fdy., sil. 1.75 to 2.25 (rail)	$23.17 to 23.67
Southern fdy., sil. 1.75 to 2.25 (rail and water)	21.28 to 21.78
Granite City iron, sil. 1.75 to 2.25	22.31 to 22.81

Finished Iron and Steel.—The Wabash Railway is in the market for 15,000 tons of 90-lb. A.R.A. rails. Nothing has been heard from other railroads centering in St. Louis as to their rail requirements for 1925, and there are no other railroad inquiries of importance before the trade. Buying in other lines continues quiet. The removal of the Pittsburgh plus rate has had no effect one way or the other on buying. The market is weak, although quotations are unchanged.

For stock out of warehouse we quote: Soft steel bars, 3.35c. per lb.; iron bars, 3.35c.; structural shapes, 3.45c.; tank plates, 3.45c.; No. 10 blue annealed sheets, 4.10c.; No. 28 black sheets, cold-rolled one pass, 5c.; cold rolled rounds, shafting and screw stock, 4.15c.; structural rivets, 3.90c.; boiler rivets, 4.10c.; tank rivets, ⅞-in. and smaller, 60 per cent off list; machine bolts, 55 and 5 per cent; carriage bolts, 40 and 5 per cent; lag screws, 60 and 5 per cent; hot pressed nuts, squares or hexagons, blank or tapped, $3.50 off list.

Coke.—Foundry coke is moving in increased quantities. Granite City by-product foundry coke is selling at $9 to $10 at the ovens, while St. Louis by-product is quoted at $10.50. There is a better demand for domestic grades, too, and dealers are beginning to stock up.

Old Material.—The market for old material is weaker, and most items are lower, the price decreases ranging from 25c. to $1 a ton. The weakness is due to lack of buying by consumers, who will not buy except

for immediate requirements. Railroad lists before the trade include: Wabash, 1600 tons of scrap rails, and Chicago & Alton 1000 tons of miscellaneous.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

	Per Gross Ton	
Iron rails	$16.50 to	$17.00
Rails for rolling	17.00 to	17.50
Steel rails less than 3 ft.	19.00 to	19.50
Relaying rails, 60 lb. and under	25.00 to	26.00
Relaying rails, 70 lb. and over	32.50 to	33.50
Cast iron car wheels	17.50 to	18.00
Heavy melting steel	15.00 to	15.50
Heavy shoveling steel	15.00 to	15.50
Frogs, switches and guards cut apart	16.50 to	17.00
Railroad springs	19.00 to	19.50
Heavy axles and tire turnings	12.00 to	12.50
No. 1 locomotive tires	16.50 to	17.00
Per Net Ton		
Steel angle bars	15.50 to	16.00
Steel car axles	19.50 to	20.00
Iron car axles	24.00 to	24.50
Wrought iron bars and transoms	18.25 to	18.75
No. 1 railroad wrought	12.75 to	13.25
No. 2 railroad wrought	12.75 to	13.25
Cast iron borings	10.50 to	11.00
No. 1 busheling	13.00 to	13.50
No. 1 railroad cast	17.00 to	17.50
No. 1 machinery cast	17.00 to	17.50
Railroad malleable	13.50 to	14.00
Machine shop turnings	7.00 to	7.50
Champion bundled sheets	8.00 to	8.50

Cincinnati

Very Little Activity in Pig Iron and Finished Materials

CINCINNATI, Oct. 7.—Two sales of round tonnages of Northern pig iron for first quarter shipment constituted the bulk of the market activity last week, the majority of the orders placed being for single carload lots. The price at which the first quarter business was booked is reported to have been $20.50, Ironton basis. For last quarter shipment, the southern Ohio market is steady at $20, though iron from other districts is competing on the outskirts of the territory at $19.50, furnace. There was little activity in Southern irons, most of the sales being carload lots for immediate shipment, taken on the basis of $17.50, Birmingham. Some first quarter inquiries for Southern iron were put out, but furnaces apparently are reluctant to quote that far ahead. One furnace, however, has named $18 for that delivery. Inquiry is very light, running from carload lots to 100 tons, and, with the exception of an occasional one for first quarter, is for immediate shipment. Shipments from furnaces are keeping up well, but there is no indication of an increase in foundry operations.

Based on freight rates of $4.05 from Birmingham and $2.27 from Ironton we quote f.o.b. Cincinnati:

Southern fdy., sil. 1.75 to 2.25 (base)	$21.55 to $22.05
Southern fdy., sil. 2.25 to 2.75	22.05 to 22.55
Southern Ohio silvery, 8 per cent	$1.77
Southern Ohio fdy., sil. 1.75 to 2.25	22.27
Southern Ohio, basic	21.77
Southern Ohio malleable	22.27

Sheets.—Some mills report a very good week, with orders showing little change from the rate of September buying. Prices are generally 2.60c. to 2.70c. for blue annealed, 3.50c. to 3.60c. for black and 4.50c to 4.60c. for galvanized, f.o.b. Pittsburgh. Tin plate orders are in fair volume at $5.50 per base box, Pittsburgh.

Reinforcing Bars.—There is every prospect of a steady demand for reinforcing bars for some months to come, as a large number of building projects are contemplated and likely will be up for bids within the next few weeks. The addition to the Alms Hotel, Cincinnati, requiring approximately 600 tons, has been awarded to the Ferro Concrete Construction Co., Cincinnati, which will furnish the bars from stock. General contract for addition at the Murray, Ky., normal school, 150 tons, has been awarded to the Cole Construction Co., Paducah, and the Raymond Construction Co., Bowling Green, Ky., has been awarded contract for a new city hospital in that city, requiring 200 tons. Bids will close Oct. 20 on the Clark County (Ohio) tuberculosis hospital, and bids are in on the new plant of the L. P. Bornwasser Co., Louisville, Ky., requiring approximately 300 tons. Reinforced bar prices generally are held at 1.90c. for hard steel bars, to 2.10c. for new billet stock, both prices being f.o.b. mill.

Warehouse Business.—Steady improvement continues to mark the demand for steel for shipment from warehouses, with prices firmly maintained.

Cincinnati jobbers quote: Iron and steel bars, 3.30c.; reinforcing bars, 3.30c.; hoops, 4.35c.; bands, 3.95c.; shapes, 3.40c.; plates, 3.40c.; cold-rolled rounds, 4.55c.; cold-rolled flats, squares and hexagons, 4.55c.; open-hearth spring steel, 4.75c. to 5.75c.; No. 10 blue annealed sheets, 3.90c.; No. 28 black sheets, 4.60c.; No. 28 galvanized sheets, 5.75c.; No. 9 annealed wire, 3.30c.; common wire nails, $3.30 per keg base; cement coated nails, $3 per keg.

Finished Materials.—The attitude of the buyers of finished materials appears to be that nothing will be lost by waiting until the situation in regard to elimination of the Pittsburgh basing becomes clearer. Certainly the trade is not much better informed today than it was two weeks ago. Nothing new has developed in the attitude of mills in this district, although it is expected that this week announcements will be made as to what steps will be taken to meet the situation. Meantime some manufacturers, who were on the old competitive line of Chicago and Pittsburgh district mills, are now in the position of being able to buy just as cheaply in Pittsburgh as in Chicago. Practically all materials being contracted for in this district are being sold on the old Pittsburgh basis, plus freight from Pittsburgh to destination. Plates generally are quoted at 1.90c., Pittsburgh, shapes at 2c., Pittsburgh, and bars from 2c. for desirable specifications, to 2.10c., Pittsburgh, for carload lots. Independent companies producing wire products have met the prices established by the American Steel & Wire Co. from its various basing points, and nails are now quoted at $2.80, mill, pretty generally, with wire at $2.55 per 100 lb., Pittsburgh, freight being added to make the delivered price. There is little activity in light rails or track accessories and prices largely are nominal. There was some buying of bolts and nuts at the new schedule, but as most jobbers and users are under contract for fourth quarter, this buying is largely of the fill-in variety.

Coke.—Coke specifications are heavier, not on account of increasing consumption, but apparently foundrymen are laying in a supply for the winter. This is customary at this period of the year. There is, however, an increased demand for domestic grades. Prices are steady and unchanged.

Connellsville furnace, $3; foundry, $4.50 to $5.50; New River foundry, $8.50 to $9; Wise County furnace, $3.75; foundry, $4.50 to $5.50; by-product foundry, $6.50, Connellsville basis.

Old Material.—There is no life to the old materials market and consumer buying is negligible. Dealers also are shy of the market. Prices are soft and at least 50c. per ton below last week.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

	Per Gross Ton	
Heavy melting steel	$13.50 to	$14.00
Scrap rails for melting	12.00 to	12.50
Short rails	16.00 to	16.50
Relaying rails	28.50 to	29.00
Rails for rolling	14.00 to	14.50
Old car wheels	12.50 to	13.00
No. 1 locomotive tires	14.00 to	14.50
Railroad malleable	14.50 to	15.00
Agricultural malleable	13.00 to	13.50
Loose sheet clippings	9.50 to	10.00
Champion bundled sheets	10.50 to	11.00
Per Net Ton		
Cast iron borings	9.00 to	10.00
Machine shop turnings	8.00 to	8.50
No. 1 machinery cast	17.00 to	17.50
No. 1 railroad cast	14.50 to	15.00
Iron axles	20.50 to	21.00
No. 1 railroad wrought	10.00 to	10.50
Pipes and flues	7.00 to	7.50
No. 1 busheling	9.00 to	9.50
Mixed busheling	7.00 to	7.50
Burnt cast	9.50 to	10.00
Stove plate	9.50 to	10.00
Brake shoes	11.00 to	11.50

Hides of 795 steers were used by Graton & Knight, Worcester, Mass., to make the leather belts required for the new Long-Bell lumber mill at Long View, Wash. Reduced to units of 1-in., single-ply belting, this order called for 94,436 ft., or about 18 linear miles.

Cleveland

Finished Material Market Shows Tendency Toward Weakness

CLEVELAND, Oct. 7.—Orders for steel increased somewhat during the week with the partial clearing up of the situation resulting from the abandonment of the Pittsburgh basing point. Mills continue to quote delivered prices on steel bars, plates and structural material figured on the Pittsburgh base. As the operation of the new selling method becomes more firmly established, it is expected that mills will gradually get away from quoting delivered prices that will clearly indicate that the price is a certain Pittsburgh base plus freight to destination, thus eliminating the identity of the freight rate as it is appearing in the present Cleveland delivered price of 2.19c. on steel bars. The market shows a tendency to weakness on most products. Steel bars have settled down to a common 2c., Pittsburgh base, and on structural material 1.90c., Pittsburgh, is now being quoted. Ohio sheet mills are still generally quoting delivered prices, using Pittsburgh as a base, although one Cleveland mill has adopted Cleveland as a basing point. Round lot business has brought out some further concessions in sheet prices. Cleveland now has been generally adopted by independent mills as a basing point on cold-rolled strip steel. In the structural field, an Ohio fabricator has taken 1400 tons for the Cicero Avenue Bridge, Chicago, the steel for which will be furnished by an Eastern mill.

Pig Iron.—Sales have slowed down materially and little inquiry is pending. Shipments continue to hold up well. Most foundries are pretty well covered for the fourth quarter requirements. The buying for the first quarter previously noted did not become general and a few additional inquiries are coming out for that delivery. The condition of the steel industry resulting from the abandonment of the Pittsburgh basing point still seems to be having an effect on the pig iron market. The only sale of any size reported during the week is 1000 tons of foundry iron placed by a northern Ohio consumer with a local furnace at $20. A Ravenna, Ohio, foundry bought 200 tons from a Valley furnace at the same price. These sales indicate a firmness in the market in spite of the dullness, although a Valley price of $19.50 has probably not disappeared. While Lake furnaces are asking $20 for outside shipment, all are not holding to this price for delivery in competitive territories and a good inquiry might bring out a $19 price. For Cleveland delivery the market is firm at $20.50 at furnace. In the Michigan territory, the range on foundry and malleable grades is from $19.50 to $20. The Hanna Furnace Co. has blown out its Cherry Valley furnace at Leetonia, Ohio, for relining.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a $3.02 freight rate from Jackson and $6 rate from Birmingham:

Basic, Valley furnace	$19.00
N'th'n No. 2 fdy., sil. 1.75 to 2.25	21.00
Southern fdy., sil. 1.75 to 2.25....$23.51 to	24.00
Malleable	21.00
Ohio silvery, 8 per cent	31.52
Stand. low phos., Valley furnace. 27.50 to	28.00

Iron Ore.—Shipments of Lake Superior ore by water during September were 6,164,931 gross tons as compared with 6,689,567 tons in August. Shipments in September, 1923, were 9,096,584 tons. The movement by water this year until Oct. 1 was 34,961,872 tons, or a decrease of 11,027,248 tons or 23.98 per cent as compared with the same period last year.

Alloy Steel.—Ohio manufacturers of alloy steel which has been generally quoted on a Pittsburgh base have not definitely announced a change in the basing point and seem rather uncertain as to what their attitude will be in this respect. However, one is now using a mill base for Cleveland shipment and in some other cases and another is adhering to the Pittsburgh basing point. If a mill base is finally generally adopted, Ohio mills probably will continue to quote on a Pittsburgh basis for Eastern shipments to meet Pittsburgh competition.

Warehouse Business.—Cleveland jobbers have reduced prices on nails and wire, giving their trade the advantage of the reduction brought about by making Cleveland a basing point on wire products.

Bolts, Nuts and Rivets.—Local bolt and nut manufacturers are awaiting developments on the basing points for steel bars before making changes in the basing point of their own products. At present they are using Cleveland as the basing point only for Cleveland delivery, but there is a possibility that Cleveland eventually will also be used as a basing point, this depending to some extent on whether the bolt and nut manufacturers secure the advantage of having Cleveland or Youngstown made the basing point for steel bars. Local rivet manufacturers are still holding to Pittsburgh and Chicago basing points except for business with railroads that enter Cleveland. Bolt and nut manufacturers are getting a good volume of contracts for the fourth quarter and are holding firmly to regular quotations.

Hot-Rolled Strips.—Cleveland and other Ohio makers continue to quote on a Pittsburgh base. Wide strip is weak with some mills taking business at net prices that figure back to a base of about 2c. However, the usual range in quotations is from 2.10c. to 2.15c. Bands are quoted at 2.40c. and hoops at 2.50c.

Cold-Rolled Strip.—The Trumbull Steel Co. and two or three other independent mills in this territory have adopted Cleveland as their basing point on cold-rolled strip steel. A Cleveland mill had previously followed the American Steel & Wire Co. in making the change, so that now Cleveland is generally established as a basing point for this product. The market appears to be holding to 4c. base.

Sheets.—Ohio sheet makers generally continue to adhere to the Pittsburgh basing point, usually naming delivered prices, but the market is very unsettled and with its weak condition there is a considerable range in prices to meet competition at points of delivery. One Cleveland mill has adopted a Cleveland base, but somewhat above the more commonly quoted Pittsburgh prices or 3.60c., Cleveland, for black, 2.70c. for blue annealed and 4.60c. for galvanized. Some round lot business came out during the week from automobile companies and steel barrel manufacturers and brought out concessions on black, blue annealed and auto body sheets. Black sheets sold at 3.30c. and possibly lower and an Ohio automobile manufacturer is reported to have purchased 1500 tons of blue annealed sheets on a 1.90c. plate base, or at 2.28c., Pittsburgh. Auto body sheets have further weakened $2 a ton to 4.50c. on an inquiry from a leading Detroit manufacturer for 5000 tons. This order is reported to have been divided between two or three mills.

Reinforcing Bars.—Billet steel bars have settled down to a maximum price of 2c., Pittsburgh, and the weakness in these is reflected in the price on rail steel bars, which are no longer above 1.90c., Pittsburgh. The 19,000 tons inquired for by the Cleveland Union Terminal Co. has not yet been placed. The Bourne-Fuller Co. has taken 175 tons for a warehouse for the Bailey Co.

Steel Bars, Plates and Structural Material.—On steel bars 2c., Pittsburgh, or 2.19c., Cleveland, has become the common price and this has been shaded. Structural material has declined to 1.90c. to 2c. Plates are unchanged with 1.85c. to 1.90c., Pittsburgh, the usual range, but with some business going at 1.80c.

Jobbers quote steel bars, 3.10c.; plates and structural shapes, 3.20c.; No. 28 black sheets, 4.35c.; No. 28 galvanized sheets, 5.45c.; No. 10 blue annealed sheets, 3.45c. to 3.60c.; cold-rolled rounds, 3.90c.; flats, squares and hexagons, 4.40c.; hoops and bands, 1 in. and wider and 20 gage or heavier, 3.85c.; narrower than 1 in. or lighter than No. 20 gage, 4.35c.; No. 9 annealed wire, $3.05 per 100 lb.; No. 9 galvanized wire, $3.50 per 100 lb.; common wire nails, $3.25 base per 100 lb.

Semi-Finished Steel.—Sheet bars, billets and slabs are quoted at $37, Youngstown, and a local producer continues to ask $37.50, either Cleveland or Youngstown, but no sales are reported which would establish the market. Specifications on sheet bars have fallen off considerably.

Coke.—The foundry coke market continues quiet with small lot buying as needed. Prices are unchanged at $4.25 to $5.50 for standard Connellsville foundry coke.

Old Material.—With no demand from the mills and little from dealers to fill old orders, prices have further declined sharply, nearly all grades being from 50c. to $1 a ton lower than a week ago. In the Valley district, dealers' prices have settled down to $17.50 for heavy melting steel and $15.50 to $15.75 for compressed sheet steel and not much material is wanted at the reduced prices. Dealers attribute the slump in the demand and the weakness to the unsettled situation caused by the abandonment of the Pittsburgh basing point.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel	$15.25 to $15.50
Rails for rolling	15.75 to 16.00
Rails under 3 ft	17.00 to 17.50
Low phosphorus melting	17.75 to 18.00
Cast iron borings	13.25 to 13.50
Machine shop turnings	13.25 to 13.50
Mixed borings and short turnings	13.25 to 13.50
Compressed sheet steel	13.25 to 13.50
Railroad wrought	13.50 to 13.75
Railroad malleable	17.75 to 18.25
Light bundled sheet stampings	12.50 to 12.75
Steel axle turnings	13.25 to 13.50
No. 1 cast	18.50 to 18.75
No. 1 busheling	13.00 to 13.25
Drop forge flashings	11.25 to 11.50
Railroad grate bars	13.25 to 13.50
Stove plate	13.25 to 13.50
Pipes and flues	11.00 to 11.50

San Francisco

Structural Contracts the More Prominent Feature—Foreign Iron Lower

SAN FRANCISCO, Oct. 2.—There are varying opinions as to the present status of local business in steel and iron, and while there is the ever-present disposition to incline toward the optimistic side, there has been very little change during the past two weeks. Considering the dullness in some of the leading lines, prices have been well sustained. There has been some easing off in asking figures, but it has been very small. This, however, has been offset by a slightly improved inquiry which, in several instances, has developed into orders. In a general way it may be said that trade conditions are a little better than two weeks ago with buyers disposed to be broader in their undertakings, especially if by so doing they can obtain some concession in price. This is regarded as an indication of increasing confidence in the near future of the trade, while at the same time it encourages the belief that prices are about at bedrock with little prospect for further declines. As heretofore explained, the one bright feature of the past summer has been the steady demand for structural materials and this gives every evidence of a continuance without impairment for some months. The requirements for new construction naturally extend to a number of side lines, and this demand has been a sustaining factor for prices which otherwise would have dropped to lower levels. In the Bay district contracts have been awarded during the last half of September for 11 new large business buildings which will require over 7400 tons of structural steel, all of which will be placed within the next 30 days. The East Bay Water Co. has completed plans for extensive additions to its system and has already ordered 1000 tons of cast iron pipe. Further awards will be made in the near future.

Pig Iron.—Business continues of moderate volume, although it is better than two weeks ago. Importers say that buyers are taking a little more freely, and the character of inquiries for future deliveries seems to give promise of early business expansion. Prices are a trifle lower than a month ago, and this fact may have been a stimulating element in the present betterment in booking new orders. The imports of Belgian and French iron are steadily growing and liberal sales are reported. Current quotations are a little lower, round lots now being obtainable at $25.50 to $26.50 per ton. The lower figures are said to be due to reduced prices in Europe, and as business there is dull, some desirable concessions have been made for shipments to the Pacific Coast. The best grades of English and Scotch iron are held nearly steady, although keen competition has compelled a cut in prices, so that orders are being booked at $28 to $29 per ton, depending on quantities ordered. A considerable tonnage of Belgian iron is on the way and from present indications it will all be sold prior to arrival.

Coke.—The demand for coke shows scarcely any change worthy of note. Buyers seem to be well supplied and new business is mostly for small parcels. Prices on foreign grades are somewhat weaker and current rates are from $17 to $18 per ton, with the bulk of business close to the lower figure. Inquiries are out for three lots aggregating 1100 tons, but acceptance of bids has not yet been announced. It is reported that the lowest figure above quoted has been shaded in an effort to secure this business. The tonnage on the way is larger than two weeks ago, in anticipation of the approach of the winter season.

Finished Steel and Iron.—Awards of contracts for structural shapes have been numerous recently; in fact, within a week the total has been in excess of 5500 tons, with pending business covering 4000 additional tons. Some of the latter may go to Los Angeles, but the bulk of it will doubtless be placed in this city. Prices are steady but low, the range being mostly from 2.35c. to 2.40c., c.i.f., although one lot is reported sold at 2.32c. The report comes from Los Angeles that a 1000-ton lot was placed there at 2.30c., the award being on the new auditorium for the Shriners. The demand for plates is not so large as this time last month, but this is regarded as merely a temporary condition. Current prices are about 2.30c., with occasional sales at 2.35c. Large tonnages could possibly be placed at as low as 2.25c., but this would be exceptional. Merchant bars are rather quiet, but the inquiries of the past two days indicate the booking of several liberal orders probably by the close of this week. The price remains steady at 2.30c. for large tonnages and 2.35c. on smaller quantities, both being c.i.f. Sheets are selling in a moderate way, but the price is strongly held with the bulk of sales at about 4.60c. on round lots. There has been a steady inquiry for wire and rods for reinforcement of concrete, particularly from the interior of the State, and the sales have aggregated over 720 tons during the last week. Nails are selling well, with prices held firmly, while nuts and rivets are rather inactive.

Old Material.—There is no change in the trade conditions, and business moves very slowly. Mills and foundries are well supplied, and the breaking up of the five warships at Oakland and Mare Island Navy Yard is furnishing an abundance of material. Prices are easy, but $11 per ton as an asking figure seems to be well maintained. There has been some little demand from Sacramento and several other interior points recently, but only small orders resulted. Only heavy melting steel sells at present, and mixed low-grade scrap is not wanted.

In the Oct. 1 quarterly bulletin of the American Institute of Weights and Measures the metric system comes in for another drubbing. It is shown that the National Education Committee on Arithmetic has presented to the National Education Association a report recommending the omission from the curriculum of the schools of 21 items in the study of arithmetic. Three of the 21 are given as apothecary's weights, troy weight and the metric system. The whole movement is toward simplification of the work in the schools, with the object of obtaining more time for intensification of the work along practical lines. It is pointed out on another page of the pamphlet that the metric system was legalized in the United States in 1866, and that during the 58 years which since have elapsed it has not been able to win its way on its merits—hence the effort to force it across by legislation.

Philadelphia

Steel Business Improving Only Slightly, While Pig Iron Is Dull

PHILADELPHIA, Oct. 7.—A moderate improvement in the volume of steel business is reported by district offices for the first week of October, as compared with the September rate. The improvement has been most noticeable in bars, sheets, tin plate and pipe. Plates and structural steel have not improved at all and have not done much more than to hold their own. The price situation continues weak, but prices remain about where they were a week or two weeks ago. Plates have gone so low that consumers are not so urgent in asking for concessions, realizing that the mills can not very well go below 1.60c., which is undoubtedly below cost for any of the Eastern companies.

Aside from a little more interest in first quarter, there is no development of interest in the pig iron market. Prices remain as previously quoted, but are not strong. Scrap is quieter and prices are lower.

Pig Iron.—Most of the furnaces of the eastern Pennsylvania district, there being only a few active, are sold up pretty well for the remainder of the year. Stocks are being reduced at a rate much more rapid than had been expected. Therefore the furnaces now active will approach the period of first quarter buying with considerably more confidence. The chief surprise is that, in view of the fairly sound position of the Eastern furnaces, there is no strength in pig iron prices and not the slightest sign of higher quotations. A few inquiries for first quarter have appeared, but furnaces have been reluctant to make quotations, believing that prices will go no lower and may go higher before the first quarter arrives. It is apparent that consumers would like to buy for first quarter at current prices, and when they have been quoted about $1 a ton above today's prices they have shown no desire to place contracts. Foundry iron sales are small in this district, but some larger business has developed in New England and in the New York district. On a substantial purchase by a New England melter an average price of $20.50, furnace, was worked out by eastern Pennsylvania makers on No. 2 plain and No. 2 X. A Westfield, Mass., consumer is in the market for a fairly large tonnage.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to $1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	$21.26 to $22.13
East. Pa. No. 2X, 2.25 to 2.75 sil.	21.76 to 22.63
East. Pa. No. 1X	22.26 to 23.13
Virginia No. 2 plain, 1.75 to 2.25 sil.	28.17 to 28.67
Virginia No. 2X, 2.25 to 2.75 sil.	28.67 to 29.17
Basic delivered eastern Pa.	20.00 to 21.00
Gray forge	21.00 to 22.00
Malleable	22.00 to 22.50
Standard low phos. (f.o.b. furnace)	24.00 to 25.00
Copper bearing low phos. (f.o.b. furnace)	24.00 to 25.00

Ferroalloys.—Contrary to expectations, no word has come from British producers of ferromanganese to advance prices quoted in this country, and $95, seaboard, is still the going figure. The leading domestic producer is understood to be meeting this price.

Billets.—Prices are not very strong, but there isn't much business to test them. Rerolling quality are quoted at $36 and forging quality at $41, Pittsburgh.

Plates.—Eastern plate mills continue to operate at around 50 per cent, one or two doing slightly better than this. Business so far this month has been no better than that of September. Railroad requirements are expected to increase soon. Prices are unchanged at 1.60c. to 1.65c., Pittsburgh, and have held at that level for two or three weeks; it seems to be about as low as the mills are willing to go and consumers do not urge concessions as frequently as they did when prices were a few dollars higher. The New York Shipbuilding Corporation is building for "stock" an oil tanker, which will require about 2500 tons of plates.

Structural Steel.—Most of the projects being figured on for erection in this district are small, but there is a good deal of competition and prices of fabricated steel are low. Mill prices on plain material range from 1.80c. to 1.90c., Pittsburgh, the higher figure applying on current small lots and the lower figure on lots of large size.

Bars.—There has been considerable improvement in the demand for bars in the past week and this is probably a good sign of growing steel consumption because of the diversity of uses to which bars are put. Prices of both steel and iron bars remain unchanged at 2c., Pittsburgh.

Warehouse Business.—Orders of steel out of stock have been slightly improved in the past few days. Prices remain unchanged, for local delivery being as follows:

Soft steel bars and small shapes, 3.10c.; iron bars (except bands), 3.10c.; round edge iron, 3.50c.; round edge steel, iron finished, 1½ x ½ in., 3.50c.; round edge steel planished, 4.30c.; tank steel plates, ¼ in. and heavier, 3.10c.; tank steel plates, ⅛ in., 3.25c.; blue annealed steel sheets, No. 10 gage, 3.75c.; black sheets, No. 28 gage, 4.75c.; galvanized sheets, No. 28 gage, 5.85c.; square twisted and deformed steel bars, 2.85c.; structural shapes, 3.10c.; diamond pattern plates, ¼-in., 5.30c.; ⅛-in., 5.50c.; spring steel, 5c.; round cold-rolled steel, 4.05c.; squares and hexagons, cold-rolled steel, 4.55c.; steel hoops, 1 in. and wider, No. 20 gage and heavier, 4.10c.; narrower than 1 in., all gages, 4.60c.; steel bands, No. 12 gage to ⅛ in., inclusive, 3.85c.; rails, 3.35c.; tool steel, 8.50c.; Norway iron, 6.75c.

Old Material.—Nearly all grades of old material are weaker, but actual price changes have occurred only in certain items. Consumers are buying very little and most of the trading is being done by brokers, who are covering on old orders. One steel company which paid $18 for heavy melting steel a little more than a month ago is now offering $17 and has picked up some small tonnages at that figure.

We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel	$17.00 to $17.50
Scrap rails	17.00 to 17.50
Steel rails for rolling	18.50 to 19.00
No. 1 low phos., heavy 0.04 and under	21.00 to 21.50
Couplers and knuckles	20.00 to 20.50
Rolled steel wheels	20.00 to 20.50
Cast-iron car wheels	17.50 to 18.00
No. 1 railroad wrought	18.50 to 19.00
No. 1 yard wrought	16.50 to 17.00
No. 1 forge fire	14.00 to 14.50
Bundled sheets (for steel works)	13.50 to 14.00
Mixed borings and turnings (for blast furnace use)	13.00 to 14.00
Machine shop turnings (for steel works use)	13.50 to 14.00
Machine shop turnings (for rolling mill use)	14.00 to 14.50
Heavy axle turnings (or equivalent)	15.00 to 16.00
Cast borings (for steel works and rolling mills)	14.00
Cast borings (for chemical plants)	16.00 to 16.50
No. 1 cast	17.50 to 18.00
Heavy breakable cast (for steel plants)	16.50
Railroad grate bars	15.00
Stove plate (for steel plant use)	15.00
Wrought iron and soft steel pipes and tubes (new specifications)	16.50 to 17.00
Shafting	24.00 to 25.00
Steel axles	24.00 to 25.00

Imports.—Among the imports at the port of Philadelphia in the week ended Saturday, Oct. 4, were 13,900 tons of iron ore from French Africa, 6113 tons of iron ore from Sweden, 1506 tons of pig iron from India and 935 tons of structural shapes from Belgium.

The Midvale Co., Nicetown, Philadelphia, has issued two pamphlets, one on Midvale extra high speed tool steel and the other on Midvale carbon tool steel. The Midvale high speed steels have been developed to meet the needs of the company and have been put to use under most severe service conditions. Not only are the tools which the company uses subjected to maximum cuts, feeds and speeds due to the demand for prompt and fast production, but the character of the work done is most varied. The pamphlets give a large amount of general information in regard to the use of high speed steels.

NON-FERROUS METALS

The Week's Prices

Cents per Pound for Early Delivery

Oct.	Copper, New York: Lake	Copper, New York: Electrolytic*	Straits Tin (Spot): New York	Lead: New York	Lead: St. Louis	Zinc: New York	Zinc: St. Louis
1.....	13.12½	12.75	48.60	8.00	7.80	6.50	6.15
2.....	13.12½	12.75	49.37½	8.00	7.80	6.52½	6.17½
3.....	13.12½	12.75	48.75	8.00	7.80	6.52½	6.17½
4.....	13.12½	12.75	....	8.00	7.80	6.52½	6.17½
6.....	13.12½	12.75	49.07½	8.00	7.80	6.55	6.20
7.....	13.12½	12.75	49.62½	8.00	7.82½	6.55	6.20

*Refinery quotation; delivered price ¼c. higher.

New York

NEW YORK, Oct. 7.

The markets are very quiet with prices a little firmer in some of them. Copper is marking time with quotations practically unchanged. There is only moderate activity in tin but values are higher. Prices for lead are practically unchanged, but those for zinc are tending upward.

Copper.—Some improvement in inquiry is noted, there being one of 2,000,000 lb. and others totaling 3,000,000 to 4,000,000 lb. Sales, however, either for domestic or foreign account have not been heavy. Previous to the larger inquiry early this week the market has continued in the deadlocked condition, referred to a week ago, buyers not being willing to pay the price asked by producers. There have been sales of a few small lots here and there at a shade under 13c., delivered, but sellers of large quantities universally ask 13c. and thus far have not been willing to recede from this position. It may be that some of the inquiries now before the market may bring out a concession from 13c., delivered. Lake copper is quoted at 13.12½c., delivered.

Tin.—The market has been dull and sales have been light, the total for the week covered by this report probably not exceeding 500 to 600 tons. Most of the business done has consisted of prompt shipment metal out of New York stocks, bought by consumers. Yesterday there was fair activity with sales of 150 to 200 tons at a range of 48.75c. to 49.12½c. Today, however, the market has been quiet with spot Straits quoted at 49.62½c. Compared with a week ago, London prices today are about £7 per ton higher, with spot standard quoted at £246, future standard £248 5s., and spot Straits at £247, with the Singapore quotation yesterday at £247 10s. The contest in London between a leading operator and another group is still on and is keeping the market here guessing as to which side to take. The natural result here is a hesitant market. Arrivals thus far this month have been 1275 tons, with 4457 tons reported afloat.

Lead.—A fair business was done yesterday on a basis of 7.82½c., St. Louis, the market there being firmer. The only feature of interest is a pronounced scarcity of spot or October lead. Within the week the London market has advanced £1 per ton, the quotation having been £33 2s. 6d. on Oct. 1 with the price today £34 2s. 6d. This has had a strengthening effect on this side.

Zinc.—There has not been much activity but prices are a little higher, prime Western being quoted today at 6.20c., St. Louis, or 6.55c., New York. The London quotation today figures out a little higher than the St. Louis value, which is one cause of the moderate strength. There has been some inquiry and buying by galvanizers, but the market is by no means active.

Nickel.—Quotations for shot and ingot nickel range from 28c. to 30c., with electrolytic nickel held at 33c. by the leading producers.

Antimony.—Demand is somewhat improved and the market is a little more active with Chinese metal for spot delivery quoted at 11c. per lb., New York, duty paid.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted at 27c. to 28c., duty paid, delivered.

Old Metals.—Demand is light and prices are practically unchanged. Dealers' selling prices are as follows in cents per lb.:

Copper, heavy and crucible	12.50
Copper, heavy and wire	11.75
Copper, light and bottoms	10.50
Heavy machine composition	10.00
Brass, heavy	8.00
Brass, light	6.50
No. 1 red brass or composition turnings	8.75
No. 1 yellow rod brass turnings	7.75
Lead heavy	7.125
Lead, tea	6.00
Zinc	4.25
Cast aluminum	17.50
Sheet aluminum	17.50

Chicago

OCT. 7.—In a listless market tin has advanced and zinc has declined, while the other metals remain unchanged. Old metal prices are also the same as a week ago. We quote in carload lots: Lake copper, 13.25c.; tin, 50.50c.; lead, 7.85c.; spelter, 6.15c.; antimony, 12.50c., in less than carload lots. On old metals we quote copper wire, crucible shapes and copper clips, 10.25c.; copper bottoms, 9c.; red brass, 8.25c.; yellow brass, 7c.; lead pipe, 6.75c.; zinc, 4c.; pewter, No. 1, 24c.; tin foil, 30c.; block tin, 38c., all buying prices for less than carload lots.

Unusual Service Record of a Bethlehem Steel Co. Blacksmith

BETHLEHEM, PA., Oct. 7.—E. G. Grace, president Bethlehem Steel Corporation, on behalf of the organization and its employees today paid tribute to the unusual service record of Jacob Peterson, word of whose death in Johnstown has reached the executive offices.

Mr. Peterson had worked in the blacksmith shop at the Cambria-Johnstown plant of the corporation for 59 years, 11 months and 24 days, which is a record for any employee of the corporation for continuous service in one shop. Born on Jan. 19, 1845, in Bedford County, Pa., he started work as a mechanical laborer in the Cambria plant on June 7, 1864. In February, 1865, he became a blacksmith, at which occupation he worked until his retirement last May, when he was placed upon the pension roll by the Bethlehem Corporation.

When Mr. Peterson started to work in the Cambria plant at Johnstown in 1864, the Cambria Iron Co., as it was then called, was already 12 years old. He started working for Cambria three years before it produced its first steel rails, and seven years before it started to produce Bessemer ingots. The plant has a present ingot capacity of 1,928,000 tons, showing growth of more than 20 times its old size since Mr. Peterson took up his life work with the company.

Operating revenues of Class 1 railroads during August are reported by the Bureau of Railway Economics, Washington, at $508,394,000 for a total of 236,132 miles of road. This was a decrease of $56,134,600, or 9.9 per cent, under August, 1923. Operating expenses of $373,599,300 represent a decrease of $53,853,900, or 12.6 per cent, under August, 1923. Net operating income of $95,415,300 in August compares with $98,934,000 in August, 1923. The current return is 4.80 per cent per annum on the tentative valuation.

"The Problems of a Foundryman" was the title of an instructive talk given Sept. 25 by Thomas Curtin, president Waltham Foundry Co., Waltham, Mass., before the Kiwanis Club. Mr. Curtin explained very fully, and in an interesting way, the operations of the foundry, speaking of the very large number and kind of castings produced and of the numerous fluids used. He eschewed technical names and plainly described different kinds of equipment and operations peculiar to the foundry.

Prices of Finished Iron and Steel f.o.b. Pittsburgh District

Carload Lots

Plates

Sheared, tank quality, base, per lb.....1.80c. to 1.90c.

Structural Materials

Beams, channels, etc., base, per lb.....2.00c.
Sheet piling .....2.10c. to 2.15c.

Iron and Steel Bars

Soft steel bars, base, per lb.....2.00c. to 2.10c.
Soft steel bars for cold finishing.....$3 per ton over base
Reinforcing steel bars, base.....2.00c.
Refined iron bars, base, per lb.....2.90c. to 3c.
Double refined iron bars, base, per lb.....4.50c.
Stay bolt iron bars, base, per lb.....6.50c. to 7.00c.

Hot-Rolled Flats

Hoops, base, per lb.....2.50c. to 2.60c.
Bands, base, per lb.....2.40c. to 2.50c.
Strips, base, per lb.....2.25c. to 2.40c.

Cold-Finished Steel

†Bars and shafting, drawn or rolled, base, per lb.....2.70c.
*Bars and shafting, drawn or rolled, l.c.l., per lb.....2.95c.
*Shafting, turned and polished, base, per lb.....2.70c.
Bars, S. A. E. Series, No. 2100.....4.25c. to 4.50c.
Bars, S. A. E. Series, No. 2300.....6.00c.
Bars, S. A. E. Series, No. 3100.....4.90c. to 5.00c.
*Strips, base, per lb.....4.00c.

*Cleveland prices same.

Wire Products

(To jobbers in car lots)

Nails, base, per keg $2.75
Bright plain wire, base, No. 9 gage, per 100 lb..... 2.50
Annealed fence wire, base, per 100 lb..... 2.65
Galvanized wire No. 9, base, per 100 lb..... 3.10
Galvanized barbed, base, per 100 lb..... 3.45
Galvanized staples, base, per keg..... 3.45
Painted barbed wire, base, per 100 lb..... 3.20
Polished staples, base, per keg..... 3.20
Cement coated nails, base, per count keg..... 2.15
Woven wire fence, base, per net ton to retailers.....$65.00

The foregoing prices also are quoted f.o.b. Cleveland district mills.

Chicago district mill prices are $2 per ton above the foregoing; Birmingham mill prices $3 a ton higher; Worcester, Mass., mills $3 a ton higher on products of that plant and Duluth, Minn., mills $4 a ton higher.

Bolts and Nuts

(Chicago and Pittsburgh)

Machine bolts, small rolled threads..60 and 20 per cent off list
Machine bolts, all sizes, cut threads..60 and 10 per cent off list
Carriage bolts, smaller and shorter, rolled threads, 60 and 10 per cent off list
Carriage bolts, cut threads, all sizes.....60 per cent off list
Hot-pressed nuts, blank or tapped, square.....4.50c. off list
Hot-pressed nuts, blank or tapped, hexagons.....5c. off list
C.p.c. and t. square or hex. nuts, blank or tapped.4.50c. off list
Eagle carriage bolts.....65, 10 and 10 per cent off list
Plow bolts .....50, 10 and 5 per cent off list
Semi-finished hex. nuts:
⅛ in. and smaller, U. S. S....80, 10, 10 and 5 per cent off list
⅞ in. and larger, U. S. S....75, 10, 10 and 5 per cent off list
Small sizes, S. A. E.....80, 10, 10, 10 and 5 per cent off list
S. A. E., ⅝ in. and larger.....80, 10 and 5 per cent off list
Stove bolts in packages .....80, 10 and 5 per cent off list
Stove bolts in bulk.....80, 10, 5 and 2½ per cent off list
Tire bolts .....60 and 10 per cent off list
Bolt ends with hot pressed nuts.....60 and 10 per cent off list
Bolt ends with cold pressed nuts....50 and 10 per cent off list
Turnbuckles, with ends, ½ in. and smaller, 55 and 5 per cent off list
Turnbuckles, without ends, ½ in. and smaller, 70 and 10 per cent off list
Washers .....6.00c. to 6.25c.
Lock washers .....80 per cent off list

Foregoing prices are quoted f.o.b. Cleveland by Cleveland manufacturers for Cleveland delivery.

Semi-Finished Castellated and Slotted Nuts

(Chicago and Pittsburgh)

(To jobbers and consumers in large quantities)

	Per 1000 S. A. E.	Per 1000 U. S. S.		Per 1000 S. A. E.	Per 1000 U. S. S.
¼-in.	$4.25	$4.25	⅝-in.	$13.25	$13.50
5/16-in.	4.90	4.90	¾-in.	16.25	16.50
⅜-in.	5.90	6.25	⅞-in.	22.50	23.00
7/16-in.	7.50	8.50	1-in.	34.00	34.00
½-in.	9.75	10.00	1⅛-in.	53.00	55.00

Larger sizes—Prices on application.

Cap and Set Screws

(F.o.b. shipping point.)

Milled hex. cap screws.....85 per cent off list
Milled standard set screws, case hardened..85 per cent off list
Milled headless set screws, cut thread.....85 per cent off list
Upset hex. head cap screws, U. S. S. thread, 85 and 10 per cent off list
Upset hex. head cap screws, S. A. E. thread, 85 and 10 per cent off list
Milled studs .....80 per cent off list

Rivets

Large structural and ship rivets, base, per 100 lb.....$2.60
Small rivets .....70, 10 and 5 per cent off list

Track Equipment

Spikes, ⅝ in. and larger, base, per 100 lb..... $2.70
*Spikes, ½ in. and smaller, base, per 100 lb.... 3.00
*Spikes, boat and barge, base, per 100 lb..... 3.00
Track bolts, all sizes, base, per 100 lb..... 3.75
Track bolts, heat treated, base, per 100 lb..... 4.25
Tie plates, per 100 lb.....$2.40 to 2.50
Angle bars, base, per 100 lb..... 2.75

*Cleveland price same.

Welded Pipe

Butt Weld

Steel Inches	Black	Galv.	Iron Inches	Black	Galv.
⅛	45	19½	¼ to ⅜	+11	+39
¼ to ⅜	51	25½	½	22	2
½	56	42½	¾	28	11
¾	60	48½	1 to 1½	30	13
1 to 3	62	50½			

Lap Weld

2	55	43½	2	23	7
2½ to 6	59	47½	2½	26	11
7 and 8	56	43½	3 to 6	28	13
9 and 10	54	41½	7 to 12	26	11
11 and 12	53	40½			

Butt Weld, extra strong, plain ends

⅛	41	24½	2 to 3	61	50½
¼ to ⅜	47	30½	¼ to ⅜	+11	+54
½	53	42½	½	21	7
¾	58	47½	¾	28	12
1 to 1½	60	49½	1 to 1½	30	14

Lap Weld, extra strong, plain ends

2	53	42	2	23	9
2½ to 4	57	46½	2½ to 4	29	15
4½ to 6	56	45½	4½ to 6	28	14
7 to 8	52	39½	7 to 8	21	7
9 and 10	45	32½	9 to 12	16	2
11 and 12	44	31½			

To the large jobbing trade the above discounts are increased (on black) by one point, with supplementary discount of 5 per cent and (on galvanized) by 1½ points, with supplementary discount of 5 per cent.

NOTE—The above discounts on steel pipe also apply at Lorain and Youngstown, Ohio, and Wheeling, W. Va. Chicago district mills have a base 2 points less. Chicago delivered base 2½ points less.

Boiler Tubes

Lap Welded Steel		Charcoal Iron	
2 to 2¼ in.	27	1½ in.	+18
2½ to 2¾ in.	37	1¾ to 1⅞ in.	+ 8
3 in.	40	2 to 2¼ in.	— 2
3¼ to 3¾ in.	42½	2½ to 3 in.	— 7
4 to 13 in.	46	3¼ to 4½ in.	— 9

Beyond the above discounts, 4 to 5 fives extra are given on lap welded steel tubes and 3 to 4 fives on charcoal iron tubes.

Standard Commercial Seamless Boiler Tubes

Cold Drawn

1 in.	55-58	3 and 3¼ in.	36-39
1¼ and 1½ in.	47-50	3½ and 3¾ in.	37-40
1¾ in.	31-34	4 in.	41-44
2 and 2¼ in.	22-25	4½ in. and 5 in.	33-37
2 and 2¾ in.	32-35		

Hot Rolled

3 and 3¼ in.	38-41	4-in.	43-46
3½ in. and 3¾ in.	39-42		

Less carloads, 4 points less. Add $8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

Carbon under 0.30 base.....87 per cent off list
Carbon 0.30 to 0.40, base .....85 per cent off list

Plus usual differentials and extras for cutting. Warehouse discounts range higher.

Seamless Locomotive and Superheater Tubes

	Cents per Ft.		Cents per Ft.
2-in. O.D. 12 gage	15	2¼-in. O.D. 10 gage	20
2-in. O.D. 11 gage	16	3-in. O.D. 7 gage	35
2-in. O.D. 10 gage	17	1½-in. O.D. 9 gage	15
2¼-in. O.D. 12 gage	17	5⅝-in. O.D. 9 gage	55
2¼-in. O.D. 11 gage	18	5½-in. O.D. 9 gage	57

Tin Plate

Standard cokes, per base box f.o.b. Pittsburgh district mills $5.50
Standard cokes, per base box Chicago district mills.... 5.60

Terne Plate

(Per Package, 20 x 28 in.)

8-lb. coating, 100 lb. base	$11.00	20-lb. coating I. C.	$14.90
8-lb. coating I. C.	11.30	25-lb. coating I. C.	16.20
12-lb. coating I. C.	12.70	30-lb. coating I. C.	17.35
15-lb. coating I. C.	13.95	35-lb. coating I. C.	18.35
		40-lb. coating I. C.	19.35

Sheets

(F.o.b. Pittsburgh district mills)

Blue Annealed

Nos. 9 and 10 (base), per lb.....2.60c. to 2.70c.

Box Annealed, One Pass Cold Rolled

No. 28 (base), per lb.....3.40 to 3.50c.

Automobile Sheets

Regular auto body sheets, base (22 gage), per lb.....4.60c.

Galvanized

No. 28 (base), per lb.....4.50c. to 4.60c.

Long Terms

No. 28 gage (base), 8-lb. coating, per lb.....4.90c.

Tin-Mill Black Plate

No. 28 (base), per lb.....3.40c. to 3.50c.

Prices of Raw Materials, Semi-Finished and Finished Products

Ores

Lake Superior Ores, Delivered Lower Lake Ports

Old range Bessemer, 55 per cent iron	$5.65
Old range non-Bessemer, 51½ per cent iron	4.90
Mesabi Bessemer, 55 per cent iron	5.40
Mesabi non-Bessemer, 51½ per cent iron	4.75

Foreign Ore, per Unit, c.i.f. Philadelphia or Baltimore

Iron ore, low phos., copper free, 55 to 58 per cent iron in dry Spanish or Algerian	9.00c. to 9.50c.
Iron ore, Swedish, average 66 per cent iron	9.50c.
Manganese ore, washed, 51 per cent manganese, from the Caucasus, nominal	42c.
Manganese ore, ordinary, 48 per cent manganese, from the Caucasus	40c.
Manganese ore, Brazilian or Indian, nominal	42c.
Tungsten ore, high grade, per unit, in 60 per cent concentrates	$8.00 to $8.50
Chrome ore, basic, 48 per cent Cr_2O_3, crude, per ton, c.i.f. Atlantic seaboard	18.50 to 24.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS_2, New York	80c.

Ferroalloys

Ferromanganese, domestic, 80 per cent, furnace, or seaboard, per ton	$90.00 to $100.00
Ferromanganese, foreign, 80 per cent, f.o.b. Atlantic port, duty paid	92.50 to 95.00
Ferrosilicon, 50 per cent, delivered	72.00 to 75.00
Ferrosilicon, 75 per cent	140.00
Ferrotungsten, per lb. contained metal	87c. to 90c.
Ferrochromium, 4 to 6 per cent carbon, 60 to 70 per cent Cr. per lb. contained Cr. delivered	10.75c.
Ferrochromium, 6 to 7 per cent carbon, 60 to 70 per cent Cr., per lb	10.50c.
Ferrovanadium, per lb. contained vanadium	$3.50 to $4.00
Ferrocarbontitanium, 15 to 18 per cent, per net ton	200.00

Spiegeleisen, Bessemer Ferrosilicon and Silvery Iron

(Per gross ton furnace unless otherwise stated.)

Spiegeleisen, domestic, 19 to 21 per cent	$31.00 to $33.00
Spiegeleisen, domestic, 16 to 19 per cent	30.00 to 32.00

Ferrosilicon, Bessemer, 10 per cent, $39.50; 11 per cent, $42; 12 per cent, $44.50; 14 to 16 per cent (electric furnace), $36.00.

Silvery iron, 5 per cent, $27.00; 6 per cent, $28.00; 7 per cent, $29.00; 8 per cent, $30.50; 9 per cent, $32.50; 10 per cent, $34.50; 11 per cent, $37.00; 12 per cent, $39.50.

Fluxes and Refractories

Fluorspar, 80 per cent and over calcium fluoride, not over 5 per cent silica, per net ton, f.o.b. Illinois and Kentucky mines	$18.00
Fluorspar, 85 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines	19.50

Per 1000 f.o.b. works:

Fire Clay:	High Duty	Moderate Duty
Pennsylvania	$40.00 to $43.00	$36.00 to $40.00
Maryland	45.00 to 47.00	40.00 to 43.00
Ohio	40.00 to 43.00	37.00 to 39.00
Kentucky	42.00 to 43.00	37.00 to 39.00
Illinois	——	37.00 to 42.00
Missouri	42.00 to 45.00	35.00 to 40.00
Ground fire clay, per net ton		6.00 to 7.00
Silica Brick:		
Pennsylvania		33.00
Chicago		42.00 to 44.00
Birmingham		50.00
Ground silica clay, per net ton		7.50 to 8.00
Magnesite Brick:		
Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.)		65.00
Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.)		40.00
Chrome Brick:		
Standard size, per net ton		45.00

Semi-Finished Steel, f.o.b. Pittsburgh or Youngstown, per gross ton

Rolling billets, 4-in. and over	$36.00 to $37.00
Rolling billets, 2-in. and under	37.00 to 37.50
Forging billets, ordinary carbons	41.00 to 42.00
Sheet bars, Bessemer	37.00 to 37.50
Sheet bars, open hearth	37.00 to 37.50
Slabs	36.00 to 37.00
Wire rods, common soft, base, No. 5 to ⅜-in.	46.00
Wire rods, common soft, coarser than ⅜-in.	$2.50 over base
Wire rods, screw stock	$5.00 per ton over base
Wire rods, carbon 0.20 to 0.40	3.00 per ton over base
Wire rods, carbon 0.41 to 0.55	5.00 per ton over base
Wire rods, carbon 0.56 to 0.75	7.50 per ton over base
Wire rods, carbon over 0.75	10.00 per ton over base
Wire rods, acid	15.00 per ton over base
Skelp, grooved, per lb	2c.
Skelp, sheared, per lb	2c.
Skelp, universal, per lb	2c.

Finished Iron and Steel, f.o.b. Mill

Rails, heavy, per gross ton	$43.00
Rails, light, new steel, base, lb	1.85c. to 1.90c.
Rails, light, rail steel, base, per lb	1.65c. to 1.75c.
Bars, common iron, base, per lb., Chicago mill	2.10c.
Bars, common iron, Pittsburgh mill	2.40c.
Rail steel bars, base, per lb., Chicago mill	2c.
Cold-finished steel bars, base, Chicago, per lb.	2.70c.
Ground shafting, base, per lb	3.20c.
Cut nails, base, per keg	$2.90

Alloy Steel

S. A. E. Series Numbers	Bars 100 lb.
2100*(1¼% Nickel, 10 to 20 per cent Carbon)	$3.00 to $3.25
2300 (3½% Nickel)	4.75
2500 (5% Nickel)	6.00 to 6.50
3100 (Nickel Chromium)	3.65 to 3.75
3200 (Nickel Chromium)	5.50 to 5.75
3300 (Nickel Chromium)	7.25 to 8.00
3400 (Nickel Chromium)	6.50 to 7.00
5100 (Chromium Steel)	3.50 to 3.75
5200*(Chromium Steel)	7.50 to 8.00
6100 (Chromium Vanadium bars)	4.50
6100 (Chromium Vanadium spring steel)	4.25 to 4.50
9250 (Silicon Manganese spring steel)	3.50 to 3.75
Carbon Vanadium (0.45 to 0.55 Carbon, 0.15 Vanadium)	4c.
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chromium, 0.15 Vanadium)	4.25 to 4.50
Chromium Molybdenum bars (0.80—1.10 Chromium, 0.25—0.40 Molybdenum)	4.25 to 4.50
Chromium Molybdenum bars (0.50—0.70 Chromium, 0.15—0.25 Molybdenum)	3.75 to 4.25
Chromium Molybdenum spring steel (1—1.25 Chromium, 0.30—0.50 Molybdenum)	4.75 to 5.00

Above prices are for hot-rolled steel bars, forging quality, per 100 lb., f.o.b. Pittsburgh. For billets 4 x 4 to 10 x 10-in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4-in. down to and including 2½-in. squares, the price is $5 a gross ton above the 4 x 4 billet price.

*Not S.A.E. specifications, but numbered by manufacturers to conform to S.A.E. system.

FABRICATED STEEL BUSINESS

Week's Awards Show Unexpected Increase—New Projects 33,000 Tons

Made up chiefly of moderate-size jobs, with a sprinkling of some running 1000 tons or more, the week's total of structural steel awards was surprising for the first week of October. The total was close to 27,000 tons, which is larger than it has been running in the past few weeks. New projects, while not numerous, call for large tonnages in one or two instances, and therefore the total for the week runs over 33,000 tons. Of this 14,000 tons is for South Water Street improvement work in Chicago and 9000 tons is for subway work in Brooklyn.

Office building, Madison Avenue and Fortieth Street, New York, Harby, Abrons & Melius, Inc., builders, 3500 tons, to Levering & Garrigues Co.

Greenbaum loft building, New York, 1000 tons, to Levering & Garrigues Co.

Garage, 177th Street and Broadway, New York, 750 tons, to Hay Foundry & Iron Works.

Libby Baths, Delancey and Chrystie Streets, New York, 1100 tons, announced a week ago as having been awarded to the Hinkle Iron Co., was later awarded to the Hedden Iron Construction Co.

Phoenix Utilities Co., structural saddles for water pipe, for use at Kimbels, Pa., 1900 tons, to Blaw-Knox Co.

Fifth Avenue Elevated, Brooklyn, extension, 200 tons, to Fort Pitt Bridge Works.

Apartment building, 800 Park Avenue, New York, 600 tons, to Harris Structural Steel Co.

Loft building, Madison Avenue and Thirty-eighth Street, New York, 1000 tons, to Harris Structural Steel Co.

Apartment building at Ninth Street and University Place, New York, for Sailors' Snug Harbor Corporation, 850 tons, to Easton Structural Steel Co.

Scranton Electric Co., Scranton, Pa., small tonnage for installation of 1900 hp. boiler, to Lehigh Structural Steel Co.

George A. Fuller Co., for Heck Department Store, Washington, 2500 tons, to Lehigh Structural Steel Co.

Masonic Temple, Manchester, N. H., 215 tons to New England Structural Co.

Boston Elevated Street Railway Co., Boston, garage, 211 tons, to Boston Bridge Works.

Lehman Hall, Harvard University, Cambridge, Mass., 150 tons, to New England Structural Co.

Telephone Exchange, Boston, 600 tons, to New England Structural Co.

Borden Mills, Kingsport, Tenn., addition, 160 tons, to McClintic-Marshall Co.

Keene Gas & Electric Co., Keene, N. H., plant addition, 100 tons, to New England Structural Co.

Scottish Rite Cathedral, New Castle, Pa., 1300 tons, to J. E. Moss Iron Works.

New York Central Lines, bridges, 300 tons, to Jones & Laughlin Steel Corporation.

New York & Pennsylvania Co., Johnsonburg, Pa., new buildings, 500 tons, to Jones & Laughlin Steel Corporation.

Champlain Oil Co., 4 80,000 bbl. oil storage tanks, Enid, Okla., 1200 tons, to Chicago Bridge & Iron Works.

Union Stock Yards Exchange Building, Omaha, Neb., 1612 tons, to Paxton-Vierling Company.

Cicero Avenue bridge superstructure, Chicago, 1774 tons, to Strobel Steel Construction Co.

Walker Street Viaduct, Oklahoma City, Okla., 823 tons, to McClintic-Marshall Co.

Chesapeake & Ohio, passenger station, Ashland, Ky., 585 tons, to A. E. Moss Iron Works.

Aluminum Goods Mfg. Co., warehouse, Manitowoc, Wis., 581 tons, to Wisconsin Bridge & Iron Co.

Union Pacific Railroad, Seventh Street Viaduct, Kansas City, Kan., 599 tons, to American Bridge Co.

Camel Co., Hammond, Ind., plant, 440 tons, to Austin Co.

York Rite Masonic Temple, Wichita, Kan., 172 tons, to Kansas City Structural Steel Co.

Texas Highway Commission, Brazos River bridge, 650 tons, to Wisconsin Bridge & Iron Co.

Biltmore-Grande apartments, Milwaukee, 340 tons, to Lakeside Bridge & Steel Co.

High school, Jefferson, Wis., 125 tons, to Wisconsin Bridge & Iron Co.

Apartment building, Nineteenth Street and Rittenhouse Square, Philadelphia, 1000 tons, to New York Shipbuilding Corporation.

Medical Arts Building, Nineteenth and Walnut Streets, Philadelphia, 600 tons, to New York Shipbuilding Corporation.

Slatington, Pa., bridge, 220 tons, to Phoenix Bridge Co.

Girard Avenue bridge, Philadelphia, 180 tons, to Phoenix Bridge Co.

Pittston, Pa., bridge, 150 tons, to Bethlehem Steel Co.

McKinney Steel Co., Cleveland, extensions to steel plant, 300 tons, to McClintic-Marshall Co.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

Staten Island Edison Co., extension of power house, 650 tons.

Knights of Columbus Building, Eighth Avenue and Fifty-first Street, 1500 tons; this project was up for bids a few months ago.

Rhode Island School of Design, Providence, R. I., museum, 500 tons.

Power plant, Sterlington, La., 350 tons.

Hotel, Lexington Avenue and Twenty-first Street, New York, 1000 tons.

Virginian Railway, building at Mullen, W. Va., 300 tons.

Brooklyn subway extensions: Bushwick Avenue, 3000 tons, bids closing Oct. 10;; two sections of Wyckoff Avenue line, 2700 tons and 3300 tons, bids closing Oct. 17.

Office building, Jersey City, N. J., 350 tons.

City of New York, public school No. 128, about 1000 tons.

Consolidated Gas Co., building at Audubon Avenue and 166th Street, New York, 500 tons.

Lynn Gas & Electric Co., Lynn, Mass., coke ovens, 350 tons.

South Water Street improvement work, Chicago, 14,000 tons.

Mount Vernon Car Mfg. Co., Mount Vernon, Ill., foundry, 2000 tons.

Church, Dallas, Tex., 600 tons.

Northern Gas & Electric Co., Hammond Ind., plant, 200 tons.

Union Bank Building, Omaha, Neb., addition, 200 tons.

Federal Reserve Bank Building, Omaha, Neb., 200 tons.

Pennsylvania Railroad, station platform at Trenton, N. J., 200 tons.

Hotel Iroquois, Atlantic City, N. J., addition, 125 tons.

RAILROAD EQUIPMENT BUYING

Active Week Brings Orders for 5650 Cars and Inquiries for 4390

Continued activity in buying of rolling stock by the railroads brought out orders in the past week for 5650 freight cars, 50 locomotives and a number of passenger cars, and inquiries for 4390 freight cars. The largest purchases were those of the Southern Railway, which bought 3650 freight cars, 50 locomotives and a number of passenger cars. This makes upward of 25,000 cars that have been purchased since Sept. 1.

The Southern Railway has ordered 2000 box cars and 250 flat cars from the American Car & Foundry Co., 1000 box cars from the Mount Vernon Car Mfg. Co., 400 stock cars from the Chickasaw Shipbuilding & Car Co., 27 passenger coaches, 10 baggage-express cars and 3 dining cars from the Pullman Car & Mfg. Corporation; 25 Mikado type, 15 Pacific type and 10 8-wheel switching locomotives from the American Locomotive Co.

The Reading, which, as announced a week ago, ordered 2000 freight cars, has bought an additional 1000 70-ton hopper cars, the order going to the Bethlehem Steel Corporation; also 10 baggage cars from the American Car & Foundry Co. and 10 combination passenger cars from the Standard Steel Car Co.

The Wheeling & Lake Erie Railroad has ordered 1000 box cars from the Standard Steel Car Co.

The Great Northern has ordered 600 steel underframes from the Pullman Car & Mfg. Corporation.

The Chicago, Indianapolis & Louisville is in the market for 500 single-sheathed, 40-ton box cars.

The Mobile & Ohio Railroad is inquiring for 200 steel-frame gondolas and 150 steel-frame hopper cars.

The Pere Marquette has placed 22 additional underframes with the Pressed Steel Car Co.

The Monon is inquiring for 500 box cars.

The St. Louis-San Francisco is inquiring for 400 underframes.

The Long Island is inquiring for 40 motor cars.

The Gulf Coast Lines have placed 2 dining cars with the American Car & Foundry Co.

The Missouri Pacific has ordered 2 dining cars from the American Car & Foundry Co. and 2 parlor cars from the Pullman Car & Mfg. Corporation.

The Burlington is now asking for figures on 2000 automobile, 500 coal and 500 stock cars.

PERSONAL

Laurence Miller, who has been connected with the Carnegie Steel Co. for the last ten years, has been appointed general manager of sales of the rolling mill division of the National Enameling & Stamping Co., at Granite City, Ill. The appointment was announced by Hayward Niedringhaus, managing director of the National company, and was effective Oct. 1. Mr. Miller was born in Detroit, and received his education at the Detroit University School and Pennsylvania Military College at Chester, Pa., from which he was graduated with the degree of civil engineer. For several years after graduation he was connected with the Detroit Fireproof Tile Co., in a sales capacity, and was later made secretary, resigning in February, 1914, to become affiliated with the sales department of the Carnegie Steel Co. at Pittsburgh. In June, 1919, he was appointed assistant manager of sales, and on April 1, 1924, was transferred to the St. Louis office as assistant manager of sales, representing in addition to the Carnegie Steel Co., Illinois Steel Co., Tennessee Coal, Iron & Railroad Co. and United States Steel Products Co.

LAURENCE MILLER

Frederick B. Cooley, president New York Car Wheel Co., has been elected a director of the Fidelity Trust Co., Buffalo. Eleven years ago Mr. Cooley purchased the Car Wheel company, then the New York Car Wheel Works, and became its president. He is also head of the New York Car Wheel Co. of Indiana. Shortly after graduation from Harvard in 1897, he entered the employ of the New York Car Wheel Works. A few years later he became associated with the National Car Wheel Co., where he stayed two years. In 1907 he became general manager of the Buffalo Car Wheel Co.

Herbert D. Kneeland, identified for the last 13 years with the United Engineering & Foundry Co., Pittsburgh, recently left the company to accept the position of Pittsburgh district representative of the American Carbonic Machinery Co. He was graduated from Cornell University, class of 1911. He was in the army during the world war and attained the rank of captain of artillery.

Harold S. Hall, formerly with the Grinnell Co. and General Fire Extinguisher Co., has joined the sales department of the Pittsburgh Valve Foundry & Construction Co., Pittsburgh, and will have charge of the new sprinkler equipment and factory heating departments.

Gilbert J. MacQuarrie, for many years connected with the Crucible Steel Co. of America, has been appointed manager of the Boston office of William Jessop & Sons, Inc., distributor of Jessop's Sheffield tool steels.

Nelson B. Gaskill of New Jersey, who delivered the dissenting opinion in the Pittsburgh plus case, was reappointed by President Coolidge last Saturday as a member of the Federal Trade Commission. Mr. Gaskill was originally appointed by President Wilson and the recess appointment just made was recommended by Senator Edge of New Jersey.

Walter H. Rastall, Chief of the Industrial Machinery Division, Department of Commerce, has returned to Washington from a four-months trip in southwestern Europe, where he made investigations regarding prospects for developing export trade for American machinery.

A. A. Hutchinson, formerly manager of the Eastern Coal & Export Co., Richmond, Va., and more recently president of the Hutchinson Engineering Co., Birmingham, Ala., has joined the field service staff of the Quigley Furnace Specialties Co., New York, as assistant sales manager, covering the South. He will make his headquarters at Atlanta, Ga.

E. D. Winkworth, president of the Solvay Process Co., Semet-Solvay Co. and the Atmospheric Nitrogen Co., Syracuse, N. Y., has retired and will be succeeded by Proctor K. Main.

James S. Allen has resigned as superintendent of the Imperial Bit & Snap Co., Racine, Wis., manufacturer of harness hardware and malleable castings.

Charles L. Miner, for many years identified with the Mathew Addy Co., Cincinnati, has joined W. C. Runyon & Co., selling agents of the Struthers Furnace Co. in its Pittsburgh office.

George L. Ballou, formerly manager of sales of the Memphis Steel Construction Co., has become Pittsburgh district sales manager of the J. E. Moss Iron Works, Wheeling, W. Va., which has structural steel plants at Wheeling and Martins Ferry, Ohio. He has opened offices at 809 Keystone Bank building, Pittsburgh.

Peter Wielander, formerly superintendent of blast furnace at the Portsmouth works, Wheeling Steel Corporation, has been promoted to general superintendent of blast furnaces, having charge of the furnaces at Portsmouth, Steubenville and Wheeling. Carl Steinbacker, formerly blast furnace superintendent of the Belfont Steel & Wire Co., Ironton, Ohio, succeeds Mr. Wielander in charge of the furnace at Portsmouth.

J. P. Gatherum, formerly in charge of the life saving car in the Ohio district for the Bureau of Mines, has resigned his position, and has become connected with the safety department of the American Rolling Mill Co., Middletown, Ohio.

Clifford F. Messinger was elected a director of the Federal Malleable Co., manufacturer of commercial castings, Milwaukee, at its recent annual meeting. He is also vice-president of Chain Belt Co. and director of the Interstate Drop Forge Co., all of Milwaukee. Other officers and directors elected were O. L. Hollister, president; L. C. Wilson, vice-president and general manager, and C. R. Messinger, W. C. Frye, E. L. Wood, Burtner Fleeger and L. S. Peregoy.

H. A. Squibbs for the past eight years assistant manager, fence and post sales department, American Steel & Wire Co., Chicago, has been appointed manager, succeeding John W. Meaker, who has been made general manager, Cyclone Fence Co., Waukegan, Ill., which has just been purchased by the United States Steel Corporation.

William R. Wallis, well known in the machine tool trade some years ago as an advertising representative of the *American Machinist*, became connected on Oct. 1 with Hitchcock's Machine Tool Blue Book, Chicago.

The Chester, Pa., plant of the Penn Seaboard Steel Corporation, Franklin Bank Building, Philadelphia, equipped for the production of steel castings, has been acquired by new interests headed by William C. Sproul, former Governor of Pennsylvania and head of the General Refractories Co., Philadelphia. The new owners will continue the operation of the plant, idle for some months past, for the same line of production, with a new company headed by S. Everett Sproul, brother of former Governor Sproul, as president; William S. Haney, vice-president, and A. M. Andorn, treasurer.

OBITUARY

JOSE ANTONIO RUILOBA, mining engineer who had charge in an advisory way of the United States Steel Corporation's zinc properties for many years, died at his home, 43 West Ninety-third Street, New York, on Sept. 30. Mr. Ruiloba was a native of Cuba, born in 1872, the scion of a family long distinguished on the island. In his youth he came to this country and attended Rensselaer Polytechnic Institute, from which he was graduated in 1890. He was induced to come to the United States through John W. Gates, for whom he became representative in South America, handling wire products. When the Steel Corporation was formed in 1901, Mr. Ruiloba was appointed to its engineering staff under the late W. R. Walker, then assistant to the president, and was assigned to the corporation's zinc properties. Mr. Ruiloba is survived by his wife. He had been a member of the Engineers' Club, New York, since 1912.

EDWARD NICKLAS BREITUNG, mining engineer and mine owner, died of heart disease after a year's illness at his home, 139 East Sixty-sixth Street, New York, on Oct. 3. He was born in Negaunee, Mich., in 1871 and was educated at Columbia Law School. Beginning as a mining engineer, he became owner of numerous mining enterprises and undertook the development of waste lands for the Government of Peru. He was organizer of the Marquette Iron Co. and Nevada Silverfield Co. and was president of the Negaunee National Bank and the Munising State Bank. Mr. Breitung was appointed to the Foreign Lands Credit Committee by Presidents Taft and Roosevelt.

CLARENCE P. CLARK, assistant chief engineer of the South Side works, Jones & Laughlin Steel Corporation, Pittsburgh, died at his home in that city, on Sept. 28. He was born in Jackson, Mich., 48 years ago, but for the last 23 years had been a resident of Pittsburgh and for all of that period had been identified with the Jones & Laughlin Steel Corporation.

ERNEST ROTH, president Western Clock Co., and vice-president Matthiessen & Hegeler Zinc Co., LaSalle, Ill., died at his home on Oct. 2, following a stroke of apoplexy. He was 68 years of age.

THOMAS T. HOWARD, owner of the Howard Brothers Boiler Works, Buffalo, died at his home in that city on Oct. 3, following a short illness with bronchial pneumonia, at the age of 54 years. With his brother, the late John Howard, he inherited the boiler works from his father and had been engaged in its operation for the last 35 years.

A. S. WHITE, first president of the Columbia Gas & Light Co., Cincinnati, died at his home in Santa Rosa, Cal., Sept. 29. Mr. White was born in Newark, Ohio, 60 years ago, and during his lifetime was identified with many enterprises throughout the United States.

EDWIN L. SHUEY, Dayton, Ohio, died at his home in that city Sept. 27, after a short illness. He was a pioneer in welfare work in large plants, having been the first welfare director of the National Cash Register Co., when the department was established in 1897. Later he was with the Lowe Brothers Paint Co., Dayton, retiring in 1918.

OTTO E. JAEGER, secretary of the sales committee and member of the board of directors of the American Stove Co. of St. Louis, died last week at his home in that city. Mr. Jaeger was born and educated in Buffalo.

CHARLES E. MCKILLIPS, special agent of the Carnegie Steel Co., died at his home in Pittsburgh, Oct. 7. He had long been in the service of the company and previous to his connection with the executive offices in Pittsburgh had been chief clerk at the Homestead works. His brother, James B. McKillips, is assistant auditor of the Carnegie Steel Co.

Proposed Terne Plate Simplification

WASHINGTON, Oct. 7.—Terne Plate Simplification Committee of the National Hardware Association of the United States has completed a study and has prepared recommendations for the elimination of 12-lb. and 35-lb. coated terne plates and the retention of six other weights. The recommendations have been forwarded by the committee to the Division of Simplified Practice, Department of Commerce. The Simplification Committee has requested that the division arrange a conference of manufacturers, distributors and users to consider the program and act on the recommendations, suggesting that the meeting be held in connection with joint sessions of the American Hardware Manufacturers' Association and the National Hardware Association of the United States at Atlantic City on Oct. 14.

The report points out that of the coatings eliminated the 12-lb. weight represented but 8½ per cent and that the 35-lb. weight but one-half of 1 per cent of the 1923 tonnage. A. E. Foote of the Division of Simplified Practice will conduct the meeting as the representative of the Department of Commerce.

New Railroad Repair Shops in Birmingham

BIRMINGHAM, Oct. 7.—Work that could not be done here in the past, in the way of repairing and rebuilding the heaviest of locomotives and cars, is now possible in most modern and completely equipped locomotive and car repair shops, just completed and put in operation at this point by the Southern Railway. The shops were built by Dwight P. Robinson, Inc., New York, engineer and contractor, and were begun last February. Experts assert that nothing quite so modern in the way of railroad repair shops have ever been constructed in the South and each machine, designed to expedite all work, represents the latest refinement in construction and operation. The location of this modern facility at Birmingham will be of great advantage to the mines and factories of the Birmingham district as well as to the entire southwestern territory served by the Southern.

The plant is built in two distinct units, one for the repair of locomotives and the other for the repair of cars. The locomotive repair shop is of the transverse type. The principal buildings are of fire-proof construction, brick and steel being used. Structural steel used in the buildings was fabricated in Birmingham by the Virginia Bridge and Iron Co. An idea of the magnitude of the shops may be gained from the fact that more than 10 miles of track has been constructed to serve it and that the shop layout covers an area of about 100 acres. Many heavy traveling and other cranes have been installed. Everthing is electrically driven and labor saving devices have been installed on all sides. The cost was about $3,500,000.

Fabricators Busy in the Youngstown District

YOUNGSTOWN, Oct. 7.—Fabricating interests in this district, substantial consumers of the lighter steel products, are maintaining the satisfactory production rates of recent weeks. The General Fireproofing Co. has recently advanced its schedules an average of 5 per cent, affecting all departments. It reports demand well sustained for metal filing cabinets and metal lath.

The Truscon Steel Co. reports a good demand for highway reinforcing mesh from contractors who in many cases are prolonging their road building programs.

Electric Furnaces for Heating and Melting

(*Continued from page* 914)

erally commended later for the satisfactory success of the informal discussions.

The chairman had invited Dr. Richard Moldenke, Watchung, N. J., to specially open the discussion. Starting out with the various methods of producing steel castings, Dr. Moldenke said that the crucible, the cupola and converter, and the open-hearth processes are all as expensive as electric furnace melting, and that the real question was one of investment and the tonnage desired. As to malleable castings, he said that the air furnace and open-hearth are equally as expensive as the electric furnace, and that here also the question was one of first cost and the tonnage desired.

In gray iron, said Dr. Moldenke, duplexing is the simplest solution for the usual foundry. Almost any work is possible when borings, turnings, steel scrap, etc., must be dealt with. Here, too, comes in the question of first cost and tonnage. Referring to Mr. Elliott as one of the pioneers in duplexing, or the use of electric furnace with the cupola on gray iron, Dr. Moldenke then discussed under three heads the particular advantage of the use of the electric furnace in the gray iron foundry. The first advantage in his opinion was the ability to superheat the iron. While this is also possible, in some cases, with the cupola, it is not as practicable nor quite as efficient. The second advantage in his opinion was the ability of the electric furnace to de-oxidize the metal, and he regarded this as possible of accomplishment only with the electric furnaces. The third advantage he enumerated was de-sulphurization. Cast iron, high in sulphur, can be decidedly improved so far as sulphur content is concerned in the electric furnace, but the speaker called attention to the strides which have lately been made in chemical de-sulphurization of cast iron by the use of soda ash and other similar materials added usually to the ladle. He then also described several modifications and improvements of this process, which he had observed in Germany, and stated that it was possible that this chemical operation might be a competitor of the electric furnace so far as de-sulphurization is concerned.

Dr. Moldenke closed his introductory remarks with the statement that the electric furnace stands first for quality, but it involves large first cost, the operating expense being fixed by the locality and other factors. Its low tonnage capacity, as compared with the cupola, should also be considered.

Chairman Elliott at this point, by showing of hands, ascertained that there were about 20 representatives of companies using electric furnaces in steel or iron foundries, and that 10 of these were actually making gray iron castings in one way or another in electric furnaces. Among those taking part in the general discussion which followed and which continued until late in the afternoon were J. A. Seede, electrical engineer, General Electric Co., Schenectady, N. Y.; Henry M. Lane, president, H. M. Lane Co., Detroit; W. B. Wallace, president Pittsburgh Electric Furnace Co., Pittsburgh; C. E. Williams, Bureau of Mines, Experiment Station, Seattle, Wash.; James T. MacKenzie, chief chemist American Cast Iron Pipe Co., Birmingham, Ala.; T. F. Baily, Baily Electric Furnace Co., Alliance, Ohio. Several others participated.

Gray Iron Borings

One of the most interesting subjects discussed was the melting of gray iron borings in electric furnaces for incorporation in castings. Two practices in general were cited, one the use of sprue and other scrap in conjunction with borings, and the other the addition of borings to a melted pool of some form of scrap. The practice of a company in Vancouver, B. C., was cited where commercial borings and scrap are melted on a large scale, and also the use of five furnaces for producing gray iron in certain specialty plants. Of course, it was generally conceded that the cupola is a cheaper medium where coke is at all available advantageously. The particular success of the electric furnace in iron foundries on the Pacific Coast was frequently mentioned.

An advantageous method of melting borings, whether in the cupola or in the electric furnace, was suggested by one or two speakers, which involves the mixing of carbon with the borings, particularly in the shape of briquets. One speaker cited the experiments of the Connecticut Electric Steel Casting Co. in making synthetic cast iron from steel scrap so that it could compete with pig iron.

Synthetic Cast Iron

The general subject of synthetic cast iron was also one of the topics. Dr. Moldenke stated that this was a tonnage proposition in Europe and that it had been possible to produce such iron in the cupola, using petroleum coke, making a product as high as 3.10 per cent in total carbon. Another interesting suggestion which was made by one of the speakers was a recent attempt to mix magnetic iron ore with peat in the form of briquets, passing these through a gas-fired retort, thus converting them partly into iron sponge and using this as a raw material. The promoters of this ran out of capital, but the speaker felt that there was some value in the suggestion, as peat is very cheap and can be obtained even as a by-product in the form of fine powder.

Another speaker, referring to synthetic iron, felt that there was no reason why the final content of carbon should be too low, because this could be overcome by intimate contact of the carbon and the steel, particularly where arcs are used as carburizers.

Other subjects which were touched upon were the preheating of scrap, the relative advantages of the acid or basic lined furnaces in making gray iron, and other interesting subjects. Throughout the entire session Dr. Moldenke answered many questions and offered many valuable suggestions.

Another Symposium on Corrosion

THREE and one-half years ago, at its annual spring meeting at Atlantic City, the American Electrochemical Society conducted a symposium on corrosion which was pronounced at that time as offering some of the best contributions to the subject ever published. The discussions were profitable and timely. (THE IRON AGE, April 28, 1921.) In years previous to that this rather complicated subject had been the topic at several conventions of this its testing society, enlivened often by the decided differences of opinion on the floor of Dr. Allerton Cushman and the late C. M. Buck. The proponents of ingot iron and copper steel fought many spectacular verbal battles under the auspices of electrochemical gatherings.

Last week at Detroit another symposium was organized by Dr. B. D. Saklatwalla, general superintendent, Vanadium Corporation of America, which was a valuable one and which not only contributed considerable to the literature but also brought the progress in the intervening time up to date. In several respects that last symposium was unique. A feature was several papers from British authorities—four in all. Another was the unmistakable impression that the fundamental knowledge of the causes of corrosion and the remedies has changed considerably. The spectacular fireworks of earlier days was absent, but the serious and worth-while exchange of opinions was ample and profitable.

Twelve papers were contributed, their presentation being divided between the morning and afternoon sessions on Thursday, Oct. 2. About 125 were in attendance at the first session, which was opened by a few

remarks by the society's president, H. C. Parmelee, editor *Chemical and Metallurgical Engineering*, New York, who turned the meeting over to the chairman of the symposium, Dr. Saklatwalla.

In introducing the subject the chairman commented on the oft-repeated remark—why should the American Electrochemical Society sponsor the problem of corrosion? His opinion was that this society is the best fitted since the question is essentially an electrochemical one—at least now generally admitted. Previously there had been a difference as to whether it was a chemical or an electrochemical phenomenon. The purpose of this symposium, said Dr. Saklatwalla, was to get some definite line of thought. As in many questions, investigators have rushed into the complexities rather than the fundamentals. Not enough work has been done on materials and too much on conditions. The former had possibly not been done because it is so hard to do.

Four British Papers

Pointing to the fact that this symposium was particularly interesting because of the contributions from British workers who, though unable to be present, had responded to invitations. The morning session was given up largely to the abstracting and discussion of these papers, followed by two American contributions.

Micro-Chemistry of Corrosion

The first British paper, "The Micro-Chemistry of Corrosion," by Prof. Cecil H. Desch, University of Sheffield, Sheffield, was abstracted by Dr. C. G. Fink, Columbia University, New York, secretary of the society. The author contends that corrosion is fundamentally electrolytic, though the theory is still in an unsatisfactory condition. Iron rust differs greatly from iron in electrolytic potential, and the presence of colloids is not always essential to cause or start corrosion. Professor Desch's special contribution is a microscopical study which he has made of the early stages of corrosion. His paper gives a detailed description of the apparatus employed and of the method of testing the alloys. Minute traces of foreign substances on the surface of the metal or alloy will often result in entirely different corrosion results, he states.

Tarnishing and Corrosion

"The Relation Between Tarnishing and Corrosion," by Ulick R. Evans, Cambridge, England, was abstracted by H. S. Rawdon, physicist, Bureau of Standards, Washington. He pointed out that Mr. Evans has written others papers in which he had shown that there is no distinction between tarnishing and corrosion. This paper takes up the action of gases on certain metals—sulphur dioxide on iron and zinc and hydrogen sulphide on copper. Mr. Evans states early in his paper that "previous work has demonstrated the electrochemical character of many important processes of corrosion."

Discussion

That Mr. Evans was once one of the principal exponents of the chemical theories was pointed out by R. J. McKay, International Nickel Co., New York. In the case of hydrogen sulphide and water, the difference may be ascribed to terms used. It should be made clear whether tarnishing is really corrosion. The Bureau of Mines has described methods for controlling such atmospheres, and such conditions should be defined carefully.

James A. Parsons, Durnim Co., Dayton, Ohio, said that differential aeration in such cases is an important factor, as has been demonstrated by some investigations on riserpipes made by his company.

Influence of Emulsoids

The third British paper, "The Influence of Emulsoids Upon the Rate of Solution of Iron," by J. Newton Friend, D. W. Hammond and G. W. Trobridge, Corrosion Research Laboratory, Municipal Technical School, Birmingham, England, was abstracted by Dr. William Blum, Bureau of Standards, Washington. That emulsoids and colloids exert a very pronounced retarding influence upon the rate of corrosion of iron is the contention of the authors, based partly on experiments in which small plates of steel were suspended in solutions of lead acetate in the presence of definite quantities of agar and also in which other steel plates were suspended in copper sulphate solutions. Iron cooking utensils resist corrosion remarkably well—explained by the authors as due in part to the protective action of the colloidal food material being cooked.

Discussion

Another application of emulsions was called attention to by Dr. Blum in discussing the paper—the use of colloidal solutions in pickling baths. Here the effect may not be due to adsorption but to the migration of emulsoids. The mechanical effect of agitation is also to be considered.

Chromium Steel

A subject which has been before several technical societies in recent months was the title of the last foreign paper—"The 'Stainless' Chromium Steels," by W. H. Hatfield, Brown-Firth Research Laboratories, Sheffield, England. The paper was abstracted by Dr. Saklatwalla. It is confined largely to discussing "some extremely interesting aspects of the influence of corroding media upon stainless chromium steels." In brief, the author finds that:

> The presence of chromium when added to steel results in an increased passivity in the presence of nitric acid; yet on the other hand, as shown by the author, the solubility in hydrochloric acid, and particularly in sulpuric acid, is increased in the case of the steels rich in chromium. Such facts indicate the complexity of the subject when the data are studied with a view to formulating helpful and satisfactory laws to guide further experiment. There is evidence that the presence of chromium under strongly oxidizing influence permits of the immediate modification of the surface of the metal, in such a way as to produce complete passivity under certain conditions of temperature and concentration of the corroding media. The influence of corroding media is readily modified by the presence of colloids.

By way of preface Dr. Saklatwalla designated this paper as a descriptive one, dealing only with 12 to 16 per cent chromium steels. He called attention to the conclusions of the author as offering hints to explain the stainless properties due to hardening. The conclusions are in part as follows:

> Numerous experiments have shown the 12 to 16 per cent chromium steels to be resistant to many influences. As indicative of those which the steel will resist and those which it will not resist, the appendix will be found of interest.
>
> It is interesting to note that whereas the presence of chromium when added to steel results in an increased passivity in the presence of nitric acid, yet, on the other hand, as shown by the author, the solubility in hydrochloric acid, and particularly in sulphuric acid, is increased in the case of the steels rich in chromium. The action in the case of the sulphuric acid is of particular interest, since while the increased passivity in nitric acid is what one would expect from the characteristics of chromium in this respect, and the increased passivity of high-nickel alloys in sulphuric acid is in line with what we would expect from the characteristics of nickel, yet from the characteristics of chromium, which is much less soluble in sulphuric acid than iron, one would, arguing on the premise of the foregoing, expect decreased solubility in sulphuric acid, as a result of alloying the chromium with the steel. Such facts indicate the complexity of the subject when the data are studied with a view to formulating helpful and satisfactory laws to guide further experiment.
>
> When considering the theoretical side of corrosion, one must bear in mind that the chief agent of corrosion is the oxidizing influence of the atmosphere. Resistance to nitric acid is experimentally demonstrated to be an excellent indication of resistance to atmospheric attack. The high-chromium stainless steel, however, while extremely resistant to pure atmospheric effects, appears to be, generally speaking, unable to resist those media which are responsible for reactions in which hydrogen can be, either directly or indirectly, replaced by iron and chromium, although this is not invariably so.
>
> In the appendix is given a brief statement of the result of experiments to date, which have been made

in the Brown-Firth Research Laboratories, with a view to determining the resistance, or otherwise, to various corroding media, and it will be seen that it is safe to state that a heat-treated steel containing 12 to 16 per cent of chromium is intrinsically made more resistant by the addition of that element, and that its resistance extends over a wide range of corroding media. It is not by any means clear what the mechanism of this action is, but the author considers that there is evidence that the presence of chromium under strongly oxidizing influences permits of the immediate modification of the surface of the metal in such a way as to produce complete passivity under certain conditions of temperature and concentration of the corroding media. The experiment detailed in the paper in which the preliminary immersion in nitric acid extended the period of passivity in sulphuric acid supports this view.

The influence of corroding media is readily modified by the presence of colloids, and the cases of vinegar, lemon juice, and sour milk would appear to support this view, since the isolated acids in each case attack the steel. There is evidence also of another kind which points in this direction, namely, that the organic restrainers used in the acid pickling of ordinary carbon steels undoubtedly will, if added in a critical percentage, prevent the solution of the steel in the acids.

There are many anomalies in the experimental field associated with the developments of rust-resisting steel, several of which the author has endeavored to describe in this paper; many others no doubt yet remain to be discovered. Although it may be desirable to have a satisfactory working theory, he is of the opinion that at the present time much further experimental work is necessary, and a much more complete agreement is also necessary between the chemist and the physicist, concerning the mechanism of the action whereby elements and combinations of elements react one with another, before the fundamental laws can be convincingly postulated.

Discussion

Introducing his discussion of this paper with certain questions—why chromium must be 12 to 16 per cent to assure stainless properties and why stainless when hardened and not stainless otherwise—Dr. Saklatwalla suggested that we should study more the microscopic architecture of the ferrite and other grains. Why, in certain special familiar steels and alloys must there be 12 per cent manganese and 12 per cent silicon; there can be no magic in the figure 12! Most stainless chromium steels lie between 9 and 14 per cent chromium. To be really fashionable here today we should introduce the lattice phase, he suggested, and yet it is curiously true that in the body centered cube there are 9 atoms, while there are 14 atoms in the face centered cube—as X-ray investigators clearly show. The ferrite grain pushes the chromium to the sides of the cube—does the chromium protect thus the grain? The phenomena of heat treating may diffuse the chromium into the body of the grain. Are we overlooking some fundamental phenomena?

Dr. Fred M. Becket, vice-president, Electro Metallurgical Corporation, New York, pointed out that steels become highly resistant to acids as the chromium advances into the higher percentages. Alloys of chromium and iron are decidedly resistant to sulphuric acid in the cold. These are expensive, of course, particularly the low-carbon ones. In steels of any range of chromium, not alloys of chromium and iron, the presence of more or less carbon has a marked influence. Stainless steel needs hardening to bring out resistance, but steels under 0.10 per cent carbon do not need treatment such as hardening to be resistant to corrosion. We must bear in mind the relation of carbon to iron and chromium and other alloys such as those with cobalt, etc.

The question of carbon content brings us back, said Dr. Saklatwalla, to be the primary and secondary phenomena. It is not the percentage of carbon; it is whether the carbon is free or not. If it is absorbed, the steel is more stainless. At this point, in his opinion, comes in the value of adding other elements such as copper, silicon, etc., which tend to keep the carbon in the absorbed condition.

In chromium steels it must be remembered, said Dr. Colin G. Fink, that we are usually dealing with room temperatures when discussing stainlessness. At higher temperatures 12 to 16 per cent chromium does not hold good, and at a red heat as high as 30 per cent is necessary.

F. N. Speller, National Tube Co., Pittsburgh, remarked that in steels under 0.08 per cent carbon the influence of chromium in water corrosion is more marked than in the higher carbon steels. What we need, he said, is the study of more facts and less speculation.

Two American Papers

Two papers for which F. N. Speller, metallurgical engineer, National Tube Co., Pittsburgh, was responsible as the author, were presented at this point by Mr. Speller as abstracts.

The first, "Film Protection as a Factor in Corrosion," is based largely on extension study in many parts of the country on all kinds of natural protective coatings formed in the process of corrosion and of some more artificial which are purposely caused by the addition of certain compounds to water in water systems. Briefly abstracted, the author said:

> It has taken several years of practical experimenting, after the cause of corrosion of iron in closed water systems was understood, to bring certain principles into practical use. With the mechanical de-aerator and de-activator for removing oxygen, the problem seems to be solved for large closed systems, while the smaller ones, we believe, can be taken care of, to a large extent at least by the use of film-forming compounds. The question of whether or not it is practicable and economical to use *sodium silicate* on a large scale in cold water supplies remains to be answered, but it seems highly probable that this can be done. With some domestic waters, lime may be used to advantage, if applied with careful control. There seems to be no doubt as to the benefit to be derived from the proper use of protective films in retarding the corrosion of iron, lead, brass and other metals. This should be carefully considered by the technical staff of municipal water works.

Discussion

Mr. Speller's paper is a discussion of solid films in particular. He classifies corrosion factors into primary and secondary. In commenting on his own paper he cited some of the prevalent theories, old and new, among which are the carbon dioxide theory, the hydrogen dioxide theory, the biological theory, the colloidal theory and Dr. Bancroft's film theory. He regarded it as satisfactory that all are now agreeing that corrosion is an electrochemical phenomenon.

Electrolytic Theory

The other paper for which Mr. Speller was responsible as a co-author with F. G. Harmon of the same company was entitled "Electrolytic Theory of Corrosion," or comments on Dr. W. D. Bancroft's recent paper on this subject. The authors show that this theory is the best one of corrosion we today possess, the many cases of so-called pure "chemical corrosion" have not been correctly interpreted. Accelerated corrosion tests must be carefully carried out to avoid results that may be entirely different from results obtained by ordinary slow processes of corrosion.

Discussion

Commenting on Mr. Speller's paper, Dr. L. Kahlenberg, professor of chemistry, University of Wisconsin, Madison, Wis., characterized the author's as especially practical and as standing out amid all the many theories.

Five papers were on the program for the second or afternoon session of the symposium. Only two of these were preprinted, some accident having delayed the others. The three offered in manuscript were presented in abstract by Prof. O. P. Watts, assistant professor, chemical engineering, University of Wisconsin.

Corrosion by Copper Sulphate

The first was "The Corrosion of Iron Alloy by Copper Sulphate Solution," by C. M. Kurtz and R. J. Zaumeyer, which gives the results of tests of 40 or more alloys as to their resistance to corrosion in that solution.

The second, "Tests for Grading Corrosion Resisting

Alloys," by William E. Erickson and L. A. Kirst, gives the results of attempts to classify all those alloys which resist copper sulphate solutions, naming those which are most resistant.

The other one of these three papers was "Effect of Reduced Pressure on the Rate of Corrosion of Amalgamated Zinc in Acid and in Alkali Solutions," by E. W. Greene and O. P. Watts.

One of the two preprinted papers was "Notes on Corrosion Testing by Different Immersion Methods," by H. S. Rawdon and A. I. Krynitsky, physicists, Bureau of Standards. A brief abstract follows:

> The need for choosing a corrosion test which shall in some measure approximate the service conditions is emphasized and illustrated by reference to an unusual case of corrosion in a submarine cable. The general types of immersion tests, simple or total immersion and two kinds of repeated immersion, continuous and intermittent, are described and illustrated as to the apparatus needed. Test results for a series of chromium steel in immersion tests of the simple and repeated type in distilled water, as well as immersion in dilute hydrochloric acid and citric acid, are given. In general, the chromium steels are more resistant to the intermittent immersion than to simple immersion in distilled water—a phenomenon which appears to be associated with the formation of a protective film over the surface of the specimen.

The work of a Chinese graduate student, Li Chi Pan, at Columbia University, New York, on "Insoluble Anodes for Electrolysis of Brine. The Lead-Silver Series," with Dr. C. G. Fink as co-author, was presented in abstract by Mr. Pan.

Miscellaneous Papers

Several papers of a miscellaneous nature were presented at the final session Saturday morning, Oct. 4, at which the president, Mr. Parmelee, presided.

Red-Shortness of Iron

A paper discussing the "Influence of Sulphur, Oxygen, Copper, Manganese on the Red-Shortness of Iron," by J. R. Cain, research associate, Bureau of Standards, Washington, was presented in abstract by Dr. William Blum, also of the Bureau.

The author discusses results of experiments based on the preparation of small ingots about 900 grams each of electrolytic iron and in some cases Armco iron, containing varying amounts of sulphur, oxygen, copper and manganese separately or in certain combinations. These ingots were melted under vacuum, or in an induction furnace under air. Bars forged from these were tested for red-shortness by bending back and forth over a blacksmith's anvil, while they cooled from approximately 1100 to 500 deg. C. "If the sulphur be below 0.01 per cent," says the author, "there is no red-shortness, even when the oxygen content, as determined by the Ledebur method, is 0.20 per cent. If the sulphur be above 0.01 per cent, a manganese sulphur quotient of 3.0 is sufficient to prevent red-shortness." The effect of copper was found to be of minor importance, but it had some tendency to correct red-shortness into low sulphur materials, studied with sulphur 0.015 to 0.021 per cent. The results of this investigation are summarized by the author as follows:

> 1. Sulphur is the principal element responsible for red-shortness. In order to avoid red-shortness in iron not more than 0.01 per cent sulphur should be present.
>
> 2. Oxygen in amounts up to 0.20 per cent does not cause red-shortness in pure iron if the sulphur is below 0.01 per cent.
>
> 3. Manganese may prevent red-shortness in iron when present to the extent of three times the sulphur percentage, if the oxygen percentage is not above 0.04 per cent.
>
> 4. The presence of considerable amounts of oxygen in irons (0.10 per cent and above) tends to reduce the efficiency of manganese in preventing red-shortness. The hypothesis is advanced that this is because some of the manganese reported in such irons is present as oxide.
>
> 5. Copper (0.05 to 0.50 per cent) is of minor importance in its effect on red-shortness of pure iron, but in some of the specimens described in this paper it tended to decrease the red-shortness.

Discussion

Dr. B. D. Saklatwalla, commenting on this paper, said that in such experiments which involved the addition of oxygen, sulphur, etc., to remelted pure irons, one is liable to miss the harmful effect of residual sulphur, and therefore, that wrong conclusions may possibly be drawn.

Metallic Tungsten

An interesting paper entitled "On the Preparation of Metallic Tungsten and Some of Its Alloys," by Louis Kahlenberg and his son, Herman H. Kahlenberg, department of chemistry, University of Wisconsin, Madison, Wis., was presented by the former. This paper is a contribution to the comparatively new but important subject of obtaining metals by the electrolyzing of fused electrolytes. Prof. Kahlenberg discussed in some detail his various experiments on dissolving either tungstic oxide or tungstic acid in mixtures of fused sodium chloride and potassium chloride and others. He also discussed the production of alkali tungsten bronzes by the same process.

Pure Alloys

Another paper on this program dealt with "Experiments on the Preparation of Very Pure Alloys and a Preliminary Study of Certain Electrical Properties of the System, Al-Mg." The author is Robert F. Mehl, department of chemistry, Junita College, Huntington, Pa. It deals with the preparation of pure basic oxide crucibles and a new method of making pure magnesia crucibles of high strength and density for use up to 1200 deg. C. A combined furnace and casting apparatus is described for the preparation of very pure alloys in a form suitable of a measurement of electrical properties.

Soderberg Electrodes

The session closed with a very interesting presentation by Dr. M. Sem, Kristiania, Norway, on recent commercial installations of the Soderberg electrode in various countries. Recalling the fact that the late Dr. J. W. Richards, former secretary of the society, had presented one or two papers on the construction and operation of this electrode a few years ago (THE IRON AGE, April 22, 1920), Dr. Sem stated that the first one ever put in operation, back in 1919, in Norway, is still operating. It is a 34-in. electrode in which there has been no breakage and of which 800 ft. has been consumed up to this time. He stated that the electrode is being used by 30 companies in various countries on furnaces producing calcium carbide, ferroalloys, electric pig iron and electric steel, as well as in the manufacture of abrasives and aluminum. The electrode consumption varies according to the different furnaces and the product. He cited some accurate data from a steel furnace in Germany at Remscheid, the details of which were published in a recent issue of *Stahl und Eisen*. He also described briefly a new hollow Soderberg electrode, 39 in. in diameter, in use in Norway, having an inside hole of about 1 ft. in diameter. This was reported as operating successfully.

Lecture by Alex Dow

Seven years ago, at the convention in Pittsburgh Alex Dow, now president Detroit Edison Co., delivered a lecture before the society. This year, on Friday evening, Mr. Dow again spoke before the society, taking as his subject, "Central Power Stations and Super-Power." For two hours he entertained and enlightened his audience. Among many striking points, he said that the cost today of erecting a power station was about $110 per kilowatt as contrasted with $60 seven years ago. Also the freight in coal alone from West Virginia to Detroit is now more than the combined freight and cost of coal at the mine in 1917. Powdered coal for central station plants has come to stay, he said.

Further Decline in Iron and Steel Exports

Smallest Total, with Two Exceptions, in Eighteen Months —Imports Back to Recent Average Figures

WASHINGTON, Sept. 30.—Making a decline of 2853 tons under July, iron and steel exports listed in THE IRON AGE table aggregated 134,628 gross tons valued at $16,858,543 in August of this year, and were the lowest since last April when they amounted to 131,276 tons. The value in August, however, was greater than in July when it was $15,462,549. The slight falling off in August was due principally to the drop in exports of plain structural shapes, which were 13,778 tons as against 17,900 tons in July. In most lines increases were made in August. The total in August of this year may be compared with 161,426 tons in August, 1923. For the eight months ended with August, 1924, exports amounted to 1,255,965 tons, valued at $154,310,927, against 1,302,995 tons, valued at $151,749,315, for the corresponding period of last year.

Much Heavier Imports

Imports of iron and steel in August amounted to 44,928 tons, valued at $2,365,019, compared with 30,410 tons in July. The increase was due chiefly to heavier incoming shipments of pig iron, which totaled 16,189 tons in August against 13,511 in July; of scrap, which amounted to 7027 tons against 1038 tons; of ingots, blooms, etc., which aggregated 2392 tons against 1195 tons, and rails, which were 9034 tons against 2272 tons. For August of last year imports amounted to 45,439 tons and for the eight months ended with August they were only 365,633 tons, valued at $19,653,236, against 614,726 tons, valued at $23,419,783, for the corresponding period of last year.

Imports of iron ore totaled 115,703 tons in August of the present year compared with 223,480 tons in July. As in July, Chile was the main source of supply of iron ore imports in August, shipments from that country in the latter month amounting to 70,145 tons.

Steel rails constituted the largest single item of exports in August with a total of 18,006 tons, Cuba taking the largest shipment, with a total of 5626 tons.

Imports of Iron and Steel in Gross Tons

(Monthly Averages)

	Total Imports	Pig Iron	Ferro-alloys	Manganese Ore and Oxide*
1909 to 1913, incl.	26,505	†14,132	....	....
1914 to 1918, incl.	23,351	4,645	3,281	‡47,155
1919 to 1921, incl.	23,901	5,708	3,710	37,115
1922	59,545	31,954	9,117	31,204
January, 1923	120,078	83,935	5,120	829
February	67,704	35,793	9,234	4,636
March	106,197	72,344	9,030	12,799
April	77,903	36,371	7,221	14,071
May	75,883	39,764	10,482	12,734
June	68,019	30,033	12,794	36,138
Six months' average	85,964	49,706	8,980	13,535
July	53,464	19,760	12,381	23,824
August	45,439	14,564	7,334	23,026
September	36,611	8,353	9,744	35,175
October	29,882	9,349	9,372	16,842
November	26,364	9,299	5,073	14,790
December	27,009	12,355	2,307	12,003
Twelve months' average	61,217	30,652	8,343	17,171
January, 1924	26,675	10,587	3,033	23,081
February	42,269	15,482	4,847	4,430
March	39,278	16,919	3,941	46,067
April	50,969	17,171	7,371	29,729
May	66,801	25,220	5,501	31,993
June	60,569	28,697	2,347	24,726
Fiscal year average	42,115	15,643	6,105	23,807
July	30,410	13,511	1,435	12,287
August	44,928	16,189	1,120	16,160
Eight months' average	45,704	17,972	3,700	24,795

*Not included in "total imports."
†Included ferroalloys.
‡Average for three years, 1916 to 1918 only.

Imports of Iron and Steel Into the United States

(In Gross Tons)

	August		Eight Months Ended August	
	1923	1924	1923	1924
Pig iron	14,564	16,189	328,464	142,776
Ferromanganese	6,845	801	64,894	21,410
Ferrosilicon	489	219	2,911	3,189
Scrap	9,900	7,027	140,762	37,720
Steel ingots, blooms, billets, slabs and steel bars	3,579	2,392	12,623	*27,176
Rails and splice bars	4,449	9,034	20,099	32,175
Structural shapes	1,389	2,798	7,463	26,240
Boiler and other plates	828	73	1,312	2,745
Sheets and saw plates	740	488	1,672	1,865
Bar iron	1,208	193	6,271	3,109
Tubular products	285	4,329	3,027	39,592
Castings and forgings	232	112	2,028	1,890
Nails and screws	107	14	883	288
Tinplate	160	9	9,631	915
Bolts, nuts, rivets and washers	22	6	150	107
Wire rods	60	408	2,195	5,137
Round iron and steel wire	205	281	2,755	2,563
Flat wire and strip steel	58	153	813	1,486
Wire rope and insulated wire, all kinds	326	292	*780	9,250
Total	45,439	44,928	614,726	365,633
Manganese ore	23,026	16,160	127,238	198,359
Iron ore	267,677	115,703	2,035,535	1,259,851
Magnesite	945	472	60,689	44,949

*Revised.

Exports of Iron and Steel

(In Gross Tons)

	August		Eight Months Ended August	
	1923	1924	1923	1924
Pig iron	3,117	4,365	20,928	29,284
Ferromanganese	....	2	3,220	3,145
Ferrosilicon	84	18	657	726
Scrap	13,662	4,167	39,533	84,537
Ingots, blooms, billets, sheet bar, skelp	9,684	5,153	79,601	54,698
Wire rods	1,548	974	19,675	13,545
Iron bars	765	254	10,682	3,985
Steel bars	12,625	7,389	111,124	72,512
Alloy steel bars	117	143	1,666	1,843
Plates, iron and steel	8,586	5,344	83,852	61,984
Sheets, galvanized	6,942	7,001	83,591	66,929
Sheets, black steel	5,781	11,060	69,188	99,565
Sheets, black iron	1,341	1,050	10,217	7,291
Hoops, bands, strip steel	3,117	2,301	26,503	24,597
Tin plate, terne plate, etc.	5,995	6,656	71,330	112,808
Structural shapes, plain material	14,165	13,778	91,026	78,652
Structural material, fabricated	7,668	5,591	50,019	47,844
Steel rails	22,718	18,006	165,050	139,230
Rail fastenings, switches, frogs, etc.	3,067	2,841	26,053	25,675
Boiler tubes, welded pipe and fittings	18,490	17,682	127,099	154,111
Cast iron pipe and fittings	2,486	2,368	17,897	18,660
Plain wire	4,690	2,493	62,206	29,139
Barbed wire and woven wire fencing	5,009	8,874	54,887	60,257
Wire cloth and screening	202	157	1,166	1,280
Wire rope	467	728	4,504	3,122
Wire nails	2,245	1,085	26,115	18,477
All other nails and tacks	760	584	6,114	5,011
Horseshoes	49	60	596	672
Bolts, nuts, rivets and washers, except track	1,614	2,005	12,667	11,821
Car wheels and axles	1,838	1,447	13,202	13,849
Iron castings	767	560	6,800	5,870
Steel castings	474	414	3,203	4,324
Forgings	252	78	2,118	1,122
Total	161,426	134,628	1,302,995	1,255,965

Monthly Exports, January, 1923, to August, 1924

(In Gross Tons)

	All Iron and Steel	Pig Iron	Semi-Finished Material
*Average, 1912 to 1914...	2,406,218	221,582	145,720
*Average, 1915 to 1918...	5,295,333	438,462	1,468,026
Calendar year 1919.....	4,239,837	309,682	258,907
Fiscal year 1920.....	4,212,732	248,126	288,766
Calendar year 1920.....	4,961,851	217,958	216,873
Fiscal year 1921.....	4,168,619	129,541	82,549
Calendar year 1921.....	2,213,042	28,305	10,363
Fiscal year 1922.....	1,721,418	28,330	63,127
Calendar year 1922.....	1,986,297	30,922	107,201
January, 1923	123,190	2,482	12,253
February	133,902	2,786	9,357
March	163,920	2,881	14,066
April	177,471	1,844	14,863
May	203,389	1,848	16,859
June	171,183	2,960	12,278
Fiscal year 1923.....	1,816,329	31,891	137,757
July	168,558	2,966	8,357
August	161,426	3,117	11,232
September	172,499	2,148	12,610
October	152,511	3,294	13,442
November	186,956	3,198	16,347
December	177,844	2,750	11,073
Calendar year 1923.....	1,992,595	32,318	152,748
January, 1924	247,942	3,812	8,594
February	164,820	4,773	11,463
March	123,618	4,047	2,278
April	131,276	4,117	8,275
May	154,136	4,317	4,895
June	163,770	2,057	11,178
Fiscal year 1924.....	2,009,343	40,596	119,744
July	137,481	1,796	10,363
August	134,628	4,365	6,127
Eight months.....	1,265,965	29,284	67,643

*Calendar years.

Sources of American Imports of Iron Ore

(In Gross Tons)

	August		Eight Months Ended August	
	1923	1924	1923	1924
Spain	.....	41	184,000	32,695
Sweden	52,523	28,354	599,082	153,620
Canada	369	675	23,379	2,072
Cuba	96,650	7,600	527,001	207,790
Chile	59,700	70,145	377,400	722,145
French Africa ..	51,199	7,800	275,028	114,582
All others	7,236	1,088	49,645	26,947
Total	267,677	115,703	2,035,535	1,259,851

Of the 11,060 tons of black steel sheets exported in August 7070 tons went to Japan and 2248 tons to Canada.

Railroad Performance

In research report No. 71 of the National Industrial Conference Board, New York, the summary indicates that more ton-miles have been produced per man-hour and more passenger-miles per man-hour during recent years than in 1915 and immediately thereafter. For the calendar years 1921, 1922 and 1923 the total train-miles per man-hour has averaged about 1.37, compared with 1.22 for the years 1917 to 1920 inclusive.

This result has been achieved in the face of the use of heavier locomotives with heavier trains behind them. The average freight train of recent years has consisted of more cars, each more heavily loaded than those of eight or ten years ago. As the volume of freight traffic increases, the amount of work required of employees increases in greater proportion than the amount of traffic, because of the tendency to congestion on lines and in yards and terminals, which makes the result achieved all the more impressive, for 1923 in particular was the heaviest traffic year ever known.

The Monarch Forge & Machine Works, Portland, Ore., has started the construction of a new plant, 70 x 200 ft., on Blackstone Street between York and Roosevelt Streets, to cost $25,000.

Unusual Performance in Changing a Blooming Mill Engine

An exceptional record in the dismantling of an old engine and the installation of a new one (both engines being of unusual size and weight) was made recently at the blooming mill of the Dominion Iron & Steel Co., Ltd., Sydney, Nova Scotia.

On Aug. 14 at 6.30 a.m. the mill stopped rolling. The dismantling of the old engine began at 7 o'clock. By 8.15 that evening, or in 13 hr. 15 min., the foundation was cleared and the engine completely dismantled. On Sept. 4 the first shipment of the new engine was received at Sydney; the last shipment arrived on the evening of Sept. 8. By 2 p.m. on Sept. 14 the engine had been completely installed and given a trial turnover, within a total of 9 days and 18 hr. and only one month after the old mill had rolled its last ingot.

The new blooming mill engine was purchased from the Lackawanna plant of the Bethlehem Steel Co. With a complete set of spare parts, including an extra crank shaft and extra cylinders, it weighed about 700 tons and required 14 cars for shipment to Sydney. The weight of the engine is 500 tons, being 50 tons heavier than the old engine. It has three bearings, as against two on the old engine. Safety devices against overspeeding and an elaborate lubricating system are special features. It is rated at 7250 hp., having 21 per cent more power than the old engine.

Malleable Castings in August

Returns from 138 malleable casting plants are reported by the Department of Commerce, Washington, to show a production in August of 36,727 tons, compared with 31,157 tons from 133 plants in July. The current figure compares with 68,069 tons from 119 plants in August of last year and with a maximum for the 12 months of 72,807 tons from 133 plants last March, this being 66.5 per cent of capacity, compared with 32.6 per cent in the current month.

Shipments in August were 37,766 tons, the lowest, with the exception of July, for considerably more than a year. Orders booked during the month were placed at 34,627 tons and the capacity of the 138 plants is given as 112,496 tons per month.

Ore Shipments from Upper Lake Ports

September shipments of iron ore are reported by the Lake Superior Iron Ore Association at 6,164,931 tons, compared with 9,096,584 tons in September, 1923, the decrease being 32.23 per cent. For the season to the end of September shipments this year were 34,961,872 tons, compared with 45,989,120 tons last year, this decrease being 23.98 per cent. For the elapsed portion of the year, Superior sent out the largest tonnage, with 11,241,040 tons, Duluth being second with 10,891,165 tons. Last year Duluth led with 15,310,275 tons, compared with 13,752,060 tons for Superior.

Luxemburg Iron and Steel in August

LUXEMBURG, Sept. 25.—Furnaces in blast on Aug. 31 were: Arbed: all 6 at Esch; all 6 at Dudelange; 2 of the 3 at Dommeldange. Terres Rouges: all 6 at Belval; Esch stopped. Hadir: 8 of the 10 at Differdange; Rumelange stopped. Rodange: all 5. Steinfort: all 3. Total in blast, 36.

Production in August: Pig iron: cast iron, 6066 tons; basic iron, 175,301 tons; total, 181,367 tons. Steel: basic, 154,165 tons; open-hearth, 1753 tons; electric, 366 tons; total, 156,284 tons.

Census Bureau reports of the manufacture of foundry supplies by 64 establishments in 1923 show products valued at $10,247,864, or more than double the $4,965,678 produced by 50 establishments in 1921. The wage earners increased from 567 to 967 and their wages from $676,241 to $1,162,068. The horsepower used in 1923 was 7741, while coal consumption was 64,771 net tons.

Safety Council Meeting in Louisville

(*Concluded from page 921*)

ing load. It should not be done as a "cure all" but, carried out in conjunction with careful inspection, it will add to the safety of lifting and hoisting operations.

Protecting Foundry Employees

At Wednesday's session, W. E. Watters, National Malleable & Steel Castings Co., Cleveland, presented a paper on "Protective Devices and Clothing for Foundry Workers." The paper described the protective devices and clothing worn by employees of the Cleveland plant, and evoked quite a discussion on the subject, in which representatives from a large number of steel and gray iron foundries took part. The consensus of opinion seemed to be that rubber garments afford the best protection to workmen in sand-blast installations. For men engaged in pouring operations, various types of leggings were described; those giving the best satisfaction were found to be the ones worn underneath the trouser leg, fitted with clamps, and with flares over the shoes. The importance of level floors in foundries was stressed as a means of preventing splashing of metal from ladles while being transported through the shops.

Care in Using Gas Cylinders

"Safe Handling and Use of Cutting and Welding Gases" was the subject of a joint paper by H. S. Smith, Union Carbide & Carbon Corporation, and G. O. Carter, Linde Air Products Co., and read by Mr. Carter. The paper recommended installation of overhead pipe lines above crane runways for carrying gases through the plant. Where it is possible to install the pipes underground this is preferable. In answer to questions, Mr. Carter recommended that an oversize pipe line be used. The manifold should be located near the roadway, where cylinders would not have to be transported long distances. It would be a paying proposition in his opinion to lay one mile of pipe line for every 45,000 cu. ft. used per month. There is no reason why lines for combustible and non-combustible gas should not run side by side, but it was recommended as a safety measure that fire walls be constructed between them.

Questioned as to the use of acetylene in cutting gray iron, Mr. Carter stated that this is being done successfully, but he would not recommend its use in cutting risers in foundries. He had not heard of back firing, but an acetylene line would have this hazard if pressure greater than 15 lb. were used. He asked the cooperation of the members in the proper handling of cylinders, stating that careless handling and loose caps were the greatest hazards.

Foreign-Born Employees Create Hazards

At the round table discussion at the extra session on Thursday statistics were presented by one company showing the percentage of accidents among the foreign-born workmen in its plants. In one plant statistics showed that the Near-Eastern people were furnishing the greater number of lost time accidents, while in others there was little difference noted among the various nationalities. The percentage of accidents among the Mexican laborers was surprisingly low, and in most plants this nationality was found eager to learn all they could about operations and particularly safety measures.

Various methods for bringing safety to the notice of the men were discussed, as well as the delayed treatment question. The solution to this problem has been found in a number of plants, by laying off a man from work the same number of days for which he failed to report an accident. It was felt by practically all those present that departmental safety committees are the best method of keeping the problem constantly before the employees, and that these meetings are more valuable when conducted by the men themselves.

At the business session it was decided to ask the board of directors to change the name of the Metals Section to the Iron and Steel and Other Metals Section, which request was complied with. Officers for the year were elected, these being T. H. McKenney, Illinois Steel Co., chairman; A. C. Gibson, Spang-Chalfant Co., Pittsburgh, vice-chairman; and Fred Bennett, Buckeye Steel Castings Co., Columbus, Ohio, secretary.

Plans of New Companies

The Julian Pump & Mfg. Co., Jamestown, N. Y., incorporated with 500 shares of preferred stock and 15,000 shares no par value common stock, will manufacture oil dispensing pumps. It has an equipped factory at the above address and will require materials and equipment as needed for the product. The company expects to get into production on a larger scale in the near future. A. N. Broadhead is president and treasurer; M. R. Julian, vice-president, and R. W. Cobb, secretary.

The Machinery Repair Corporation, Jamestown, N. D., has been incorporated with $15,000 capital stock to operate a machine repair works, specializing on boiler and welding work. T. S. Halligan heads the company.

The Dayton Enameling & Sheet Metal Co., Dayton, Ohio, has been incorporated with $7,000 to manufacture and to enamel sheet metal products of all kinds. It has purchased the Dayton Enamel & Sheet Metal Works, a partnership having a fully equipped plant for present needs. Herbert T. Leyland, 1243 U. B. Building is secretary.

The Harris-Thomas Drop Forge Co., Dayton, Ohio, has been incorporated to take over the plant of the National Drop Forge Co. and will continue the manufacture of drop forgings and special dies. Materials will be purchased as required. The plant is located at Harshman and Crane Streets. G. E. Harris is president of the company and has been in charge of the forge and foundry division of the Davis Sewing Machine Co. for the last six years. Associated with him is Charles Thomas, who was in direct charge of the forge shop of the same plant.

Benj. H. Rhynearson has disposed of his interests in the Richey-Rhynearson Machinery Co., Indianapolis, and has engaged in a business of his own as appraiser and liquidator of machinery, machine tools and factory equipment. His headquarters are at Thirty-eighth and Dearborn Streets, Indianapolis.

Property assets of the Columbus Anvil & Forging Co., Columbus, Ohio, have been purchased by the newly organized Columbus Anvil & Forging Co., with office and plant at 115-29 West Frankfort Street, recently incorporated with $50,000 capital stock. T. N. Long, founder of the business, will continue as general manager. The company is fully equipped to produce anvils and miscellaneous forgings, but does not contemplate the production of drop forgings. J. E. Finneran is president and W. J. Bennett, secretary-treasurer.

The Jobar Tool & Cutter Co., Syracuse, N. Y., has been incorporated with capital stock of $50,000 to manufacture tools. Plans have not matured as yet. J. R. Jenney, O. C. S. Building, is representative.

The Equitable Radio Corporation, Hughesville, Pa., organized with capital stock of $250,000, has taken over the business of the Hughesville-DeTektor Radio & Cabinet Co., Hughesville. The company has a completely equipped plant with machine and tool shop for manufacturing radios. It will not undertake the production of parts until next spring. The company is open for quotations on materials. W. M. Engel is president.

The Gotfredson Body Corporation, 3100 Meldrum Avenue, Detroit, has been organized to manufacture automobile bodies and similar products. Plans are incomplete as yet. M. H. Coleman is secretary-treasurer.

The Federal Can Co., 701 New York Life Building, Kansas City, Mo., will manufacture cans and like products. According to A. J. Walker, president, the intentions are to get into production as soon as possible, but plans have not yet matured. Its capital stock is $50,000.

The Globe Anchors, Inc., 151 West Pearl Street, Jackson, Mich., recently incorporated to manufacture anchoring equipment, will not engage in manufacturing for some time. Its products for the present will be manufactured by the Globe Pattern & Mfg. Works, Jackson.

The Couple Gear Electric Truck Co., 1450 Buchanan Avenue, South-West, Grand Rapids, Mich., will operate as successor to the General Devices & Fittings Co., which has been engaged for 15 years in the manufacture of trucks and heavy electrical construction materials. Business will be continued in the thoroughly equipped plant, the essential change being in officers and personnel. J. M. Van Splunter is secretary-treasurer.

AMERICAN MACHINERY TRADE

Exports and Imports in July of Machine Tools and Other Machinery

WASHINGTON, Sept. 30.—Exports of machinery from the United States in August of this year were valued at $30,286,511, as against $23,382,472 in July and $27,940,665 in August of last year. For the eight months ended with August, 1924, they were valued at $216,188,635, compared with $188,909,876 during the corresponding period of 1923. Exports of machine tools in August of this year numbered 4971, valued at $813,241, against 3763, valued at $671,932 in July.

Imports of machinery in August of this year were valued at $652,716, compared with $819,769 in July and $592,632 in August of last year. For the eight months of the current year they were valued at $6,360,777, compared with $6,467,799 for the corresponding period of last year.

Among exports, aside from agricultural machinery, the largest August items were, in order, sugar-mill machinery, internal combustion engines, typewriters, mining and quarrying machinery and textile machinery. For the eight months, after agricultural machinery, typewriters led, followed by mining and quarrying machinery, internal combustion engines, textile machinery, sewing machines and electrical machinery, each with more than $5,000,000.

Imports of Machinery Into the United States

(By Value)

	August		Eight Months Ended August	
	1923	1924	1923	1924
Metal-working machine tools	$14,486	$26,123	$265,069	$251,736
Agricultural machinery and implements	84,486	211,549	660,045	1,726,918
Electrical machinery and apparatus	13,137	66,222	393,918	296,391
Other power generating machinery	52,438	684	1,489,251	83,668
Other machinery	238,322	292,283	1,712,563	2,683,615
Vehicles except agricultural	189,763	55,855	1,946,953	1,318,449
Total	$592,632	$652,716	$6,467,799	$6,360,777

Machinery Exports from the United States

(By Value)

	August	August	Eight Months Ended August	August
	1923	1924	1923	1924
Locomotives	$289,725	$560,903	$2,982,943	$2,437,602
Other Steam Engines	40,790	45,574	422,999	358,111
Boilers	38,053	162,222	727,986	1,347,178
Accessories and Parts	197,631	270,707	819,734	1,167,077
Automobile Engines	280,862	254,376	3,846,880	2,462,094
Other Internal Combustion Engines	528,536	940,703	4,679,451	4,068,115
Accessories and Parts for	309,546	326,955	2,229,765	2,524,192
Electric Locomotives	321,057	187,284	2,666,287	1,668,645
Other Electric Machinery and Apparatus	676,021	708,893	5,506,509	5,470,561
Excavating Machinery	65,650	410,869	993,994	1,674,420
Concrete Mixers	36,729	72,780	362,685	449,012
Road Making Machinery	101,846	268,573	622,763	846,036
Elevators and Elevator Machinery	436,850	168,147	3,151,129	1,131,152
Mining and Quarrying Machinery	1,070,072	904,784	6,366,346	6,877,332
Oil Well Machinery	808,054	631,437	4,390,852	4,554,393
Pumps	564,972	569,598	4,741,511	4,773,095
Lathes	99,913	141,602	560,978	779,619
Boring and Drilling Machines	46,283	49,711	433,630	371,727
Planers, Shapers and Slotters	32,891	41,923	163,403	205,081
Bending and Power Presses	77,704	36,644	193,377	203,951
Gear Cutters	22,131	37,721	117,009	272,255
Milling Machines	48,481	73,923	289,061	337,445
Thread Cutting and Screw Machines	114,557	46,058	382,666	410,383
Punching and Shearing Machines	23,443	24,451	126,892	67,082
Power Hammers	22,280	31,937	105,001	150,934
Rolling Machines	1,100	.....	18,849	87,687
Sharpening and Grinding Machines	93,670	214,421	656,519	921,107
Other Metal Working Machinery and Parts of	481,850	378,209	3,126,092	2,810,006
Textile Machinery	905,188	722,910	6,321,614	5,913,154
Sewing Machines	961,916	528,988	5,752,283	5,816,303
Shoe Machinery	111,613	116,226	944,962	888,240
Flour-Mill and Gristmill Machinery	132,432	37,853	729,676	532,056
Sugar-mill Machinery	919,993	1,649,998	2,442,960	3,991,016
Paper and Pulp Mill Machinery	135,172	162,133	1,531,638	1,542,225
Sawmill Machinery	165,249	39,769	478,142	351,859
Other Woodworking Machinery	65,797	136,979	691,048	922,428
Refrigerating and Ice Making Machinery	139,496	196,827	1,551,301	1,174,932
Air Compressors	260,956	224,002	1,672,845	2,022,861
Typewriters	981,553	1,111,237	9,322,192	9,953,570
Power Laundry Machinery	105,887	75,839	682,231	686,677
Typesetting Machines	387,709	166,732	2,361,948	2,216,219
Printing Presses	476,196	295,912	2,931,460	2,980,025
Agricultural Machinery and Implements	6,325,306	6,550,292	34,479,641	44,066,108
All Other Machinery and Parts	9,035,505	10,710,419	66,330,624	84,704,670
Total	$27,940,665	$30,286,511	$188,909,876	$216,188,635

Metal-Working Machinery Exports

	July, 1924		August, 1924	
	Number	Value	Number	Value
Lathes	72	$49,133	112	$141,602
Boring and drilling machines	187	34,018	175	49,711
Planers, shapers and slotters	21	27,364	25	41,923
Bending and power presses	38	24,192	32	36,644
Gear cutters	24	33,438	30	37,721
Milling machines	62	70,028	45	73,923
Thread-cutting and screw machines	41	30,500	139	46,058
Punching and shearing machines	12	4,956	23	24,451
Power hammers	16	26,342	117	31,937
Rolling machines	2	10,238	...	.....
Sharpening and grinding machines*	271	238,488	242	214,421
Chucks, center, lathe, drill and other metal-working tools	1,680	27,531	3,199	36,896
Pneumatic portable tools	1,337	95,704	832	77,954
Total	3,763	$671,932	4,971	$813,241

*Includes number of external and internal grinding machines only; "other sharpening and grinding machines" are reported now by weight instead of by number.

Reciprocal Tariff Agreement

WASHINGTON, Oct. 7.—Canada and Australia have entered into a reciprocal tariff agreement, according to a report received by the Department of Commerce. By terms of the agreement printing machinery, adding and computing machines, typewriters and cash registers will be admitted to Australia from Canada free of duty as agianst the old rate of 10 per cent. Iron and steel tubes or pipes, except riveted, cast close jointed and cycle tubes, or pipes not more than 3 in. in diameter will take a duty of 5 per cent when admitted from Canada, as compared with the former duty of 10 per cent. After a certain date, depending upon the development of the industry in Australia, the duty on pipe from the United States and other countries, except British Dominions, will be increased to 40 per cent while from Canada it will be increased to 35 per cent.

Crucible Steel Co. Earnings Exceed Dividend Requirements

A strong balance sheet and earnings above dividend needs are disclosed in the report of the Crucible Steel Co. of America for the fiscal year ended Aug. 31.

Operating profits and other income totaled $7,703,076, compared with $6,092,362 in 1923. Surplus available for dividends was $4,250,049. Deducting $1,750,000 for preferred dividends, the remainder of $2,500,049 was equivalent to $4.54 a share on $55,000,000 of common stock, against $5.20 the year before. Current assets in the balance sheet are placed at $28,794,933, against current liabilities of only $3,015,533, of which $2,578,033 consisted of accounts payable, accrued interest and taxes. Included with current assets are $5,206,729 cash, $2,818,500 listed securities at market value, $3,433,663 in accounts receivable, and $17,260,263 inventories of product, raw materials and supplies.

Chairman H. S. Wilkinson said in his statement to stockholders: "Your company spent during the last year $2,104,996 for new equipment and economies of operation. The finishing capacity has been increased about one-third at the Midland plant by additions of new rolling units in our merchant mill. Motors and equipment have been installed for the electrification of finishing mills at both the Park and Halcomb plants. These improvements not only enable us to increase our output of finished steel but to produce it at lower costs than have been practicable heretofore."

Machinery Markets and News of the Works

EXHIBITS HELP TRADE

Benefits Derived from Two Showings of Tools in New England

General Situation Has Not Changed, Business Continuing in Unsatisfactory State

Some stimulation of machine-tool buying resulted from the recent exhibits of machine tools at the Boston convention of the American Steel Treaters and at the machine-tool exhibit at New Haven, Conn., a week earlier. A number of manufacturers and dealers who had exhibits at Boston did a very satisfactory business, much more, in fact, than they expected, in view of the hesitancy still prevailing in industry.

Aside from this sporadic increase in buying, largely centered in New England, there has been no marked change in the machine-tool situation, but some manufacturers report a slow but steady improvement. At least it may be said that prospective buyers are taking a little more interest, although in many instances they are not ready to place orders.

Railroad buying is scattered and in fair volume, but no large lists are being considered, except that of the Chesapeake & Ohio, on which nothing has as yet been done. A smaller list of the Louisville & Nashville may be closed within a week or so. The Nickel Plate has bought a number of machines.

The Standard Sanitary Mfg. Co. is said to be about ready to close on a list of equipment for a brass finishing department at Louisville, Ky.

New York

NEW YORK, Oct. 7.

SOME machine-tool dealers and manufacturers who had exhibits at New Haven and Boston within the past few weeks report that quite a little business was stimulated as a result of these exhibits. One New York company sold nearly 20 machines at the Boston convention of the American Society for Steel Treating. General business has not shown much improvement, but inquiries are slightly more numerous and manufacturers are making preparations for the resumption of more active production. Among the more important purchases of tools the past week were the following: Tennessee Coal, Iron & Railroad Co., 36-in. x 8-ft. planer; Chicago, Burlington & Quincy Railroad, three car box borers; Cleveland, Cincinnati, Chicago & St. Louis Railroad, 48-in. car wheel borer and an axle lathe; Warren Foundry & Pipe Co., 54-in. x 14-ft. planer; Carnegie Steel Co., 6-ft. radial drill.

The New York Edison Co., Irving Place and Fifteenth Street, New York, has taken out a permit for a one-story electric generating plant, 205 x 255 ft., at 301-27 East Fourteenth Street, estimated to cost $3,500,000, for which plans were drawn by Thomas E. Murray, Inc., 55 Duane Street, consulting engineer.

The Bureau of Supplies and Accounts, Navy Department, Washington, is asking bids until Oct. 21 for brass and steel bolts and nuts for the Brooklyn and Puget Sound Navy Yards, schedule 2729; and for 1500 fire extinguishers for the Brooklyn yard, and 115 for the Mare Island Navy Yard, schedule 2714.

The American Chamber of Commerce in France, 32 Rue Taitbout, Paris, has received an inquiry (W-2884) from a local company interested in the purchase of American sugar refining machinery.

Joseph Stolz & Son, Inc., Commerce Avenue and 170th Street, New York, operating a steel and iron works, is in the market for a quantity of button head rivets, 2 x ⅝-in., 2½ x ⅝-in. and 3 x ⅝-in.

The Hyro Mfg. Co., Inc., 352 West Thirteenth Street, New York, is planning to purchase a squaring shear, power-operated, about 5 ft. long.

Manual training equipment will be installed in the three-story junior high school, 100 x 200 ft., to be erected at Croton-on-Hudson, N. Y., estimated to cost $300,000, for which foundations will be laid at once. Harry Stevenson, 101 Park Avenue, New York, is architect.

The Standard Oil Co. of Porto Rico, operated by the Standard Oil Co., 26 Broadway, New York, will construct and operate an oil storage and distributing plant at San Juan harbor, including complete oil terminal and harbor handling facilities. The cost is reported in excess of $100,000 with equipment.

Block & Hess, 18 East Forty-first Street, New York, architects, have plans for a four-story automobile service, repair and garage building at 229-33 East Eighty-fifth Street, to cost approximately $150,000 with equipment.

The Common Council, Fulton, N. Y., is asking bids until Oct. 14 for equipment for the municipal waterworks, including one 4,000,000-gal. capacity pump, one 3,000,000-gal. pump and one 4,000,000-gal. booster pump, all electrically-operated; also for two primers. Hazen & Whipple, 25 West Forty-third Street, New York, are engineers. M. C. Baker is city clerk.

The Tottenville Copper Co., Tottenville, S. I., has started the erection of new buildings at its plant to replace structures destroyed by fire several months ago, including two main structures, 75 x 160 ft. and 40 x 80 ft. respectively, to be used as a refining works and blast furnace department. Benjamin Lowenstein is president.

The Brooklyn Edison Co., Pearl and Willoughby Streets, Brooklyn, is arranging a bond issue of $25,000,000, a portion of the proceeds to be used for extensions and improvements in generating plants and system.

The Auto Strop Safety Razor Co., 59 Lock Street, Newark, N. J., has awarded a general contract to Thompson & Binger, 103 Park Avenue, New York, for a new three-story plant, 60 x 180 ft., at 960-990 Frelinghuysen Avenue, Virginia and McClellan Streets, estimated to cost $150,000 with equipment. The contractor prepared the plans.

The Public Service Electric & Gas Co., Public Service Terminal, Newark, has made application for permission to issue bonds for $15,000,000, a portion of the fund to be used for extensions and improvements in generating plants and system. The company has work in progress on the first unit of its proposed electric generating plant at Kearny to cost $7,500,000. Thomas N. McCarter is president.

The De Forest Radio Telephone & Telegraph Co., Franklin Street, Jersey City, N. J., has leased two floors in the building at 120 Sherman Avenue, totaling about 10,000 sq. ft., and will equip for assembling and parts work. A portion of the space will be used for distributing service.

Chicago

CHICAGO, Oct. 6.

ORDERS for machine tools are somewhat more numerous, although confined principally to single machines. Larger purchases, in most instances, are being postponed until after election. The largest business in early prospect, namely the proposed equipment purchases for the Ajax Motor Co., Racine, Wis., will probably not come to a head for two or three weeks. Outside of the Illinois Central, none of the larger Western roads contemplates issuing a list in the near future.

The Kansas City Southern has placed an order for an 18-in. x 8-ft. geared-head motor-driven engine lathe for Shreveport, La. A Chicago buyer has closed for a 20-in. drill, a No. 2 universal milling machine, a surface grinding

machine, a sensitive drill, and a number of electric tools and grinders. The Knight Light & Soda Fountain Co., Chicago, has placed an order for a 14-in. x 6-ft. cone-head lathe. The Whitaker Mfg. Co., Chicago, has purchased an upright drill and a shaper, both used tools, and is in the market for a planer. The Western Clock Co., LaSalle, Ill., has ordered a 16-in. x 6-ft. geared-head motor-driven engine lathe.

The Crescent Dental Mfg. Co., 2214 South Sawyer Avenue, Chicago, will receive bids through C. W. Lampe & Co., 155 North Clark Street, on a two-story mill construction factory, 50 x 125 ft., on Twenty-sixth Street, near Homan Avenue, to cost $50,000.

The Western Shade Cloth Co., Jefferson and West Twenty-second Streets, Chicago, has awarded a contract for a one-story power-house, 82 x 93 ft., at 2017-25 Spring Street, to cost $150,000.

Robert Gordon, Inc., 22-24 West Austin Avenue, Chicago, steam fitter, has awarded a contract for a four-story mill construction factory.

The Peoples Gas Light & Coke Co., 122 South Michigan Avenue, Chicago, has taken bids on coke bins and a conveyor with sheds on the corner of Elston Avenue and Division Street, to cost $30,000.

The Litterer Brothers Mfg. Co., manufacturer of metal sinks, 730 North Franklin Street, Chicago, has awarded contract for a one-story plant for the production of plumbing supplies, 94 x 167 ft., 3022-32 North Rockwell Street, to cost $25,000.

The Hart Battery & Electrical Works, recently incorporated with $25,000 capital stock, has rented space at 134 West Lake Street, Chicago, and is manufacturing the Hart dual A battery, a feature of which is that it charges and discharges simultaneously while a radio is in operation. It is said that for this reason the battery will not run down. Officers are Harry Hart, president; Julius B. Rubenstein, vice-president, and Jacob I. Goldstein, secretary and treasurer.

The Camel Co., manufacturer of railroad appliances, McCormick Building, Chicago, has purchased 30 acres at Hammond, Ind., served by the Indiana Harbor Belt Railroad and two other lines, and has awarded contract for a plant, 190 x 320 ft., to employ 500.

The Gellman Wrench Co., the name of which was recently changed to the Gellman Mfg. Co., Rock Island, Ill., has increased its capital stock from $50,000 to $100,000 and has announced its intention of erecting a plant. Selection of the site has been made, but not announced, because the deal has not been closed. Heretofore the manufacture of the company's products, wrenches and can openers, has been contracted out.

The Midland Structural Steel Co., 1300 South Fifty-fourth Avenue, Cicero, Ill., is inquiring for a radial drill with 12 or 14-ft. arm, suitable for heavy reaming and for drilling Bethlehem H columns.

The Progress Mfg. Co., Arthur, Ill., will buy a used circle shear and flanger, similar to Niagara No. 208 A.

The Public Service Co. of Northern Illinois, Chicago, has issued bonds for $5,000,000, a portion of the proceeds to be used for extensions and improvements in power plants and system.

The Mount Vernon Car Mfg. Co., Mount Vernon, Ill., has plans for a one-story foundry, 240 x 350 ft., estimated to cost $275,000, including equipment. Bids will be taken at once on general contract. Neiler, Rich & Co., 431 South Dearborn Street, Chicago, are architects and engineers. W. C. Arthurs is president.

The Minneapolis & St. Louis Railroad Co., Fourth and Jackson Streets, St. Paul, Minn., has tentative plans for new car repair shops at Clear Lake, Iowa, estimated to cost $100,000 with equipment.

The Artesian Ice Co., Fort Madison, Iowa, has plans under way for an addition to increase the capacity to 100 tons per day. The machinery will be electrically-operated. The expansion will cost approximately $80,000. Herman Friedl, 501 North Dearborn Street, Chicago, is architect.

The Chicago, Rock Island & Pacific Railroad Co., Chicago, is asking bids for a new engine house and repair shop at Cedar Rapids, Iowa, estimated to cost $30,000. A. F. Hawk, company offices, 139 West Van Buren Street, Chicago, is architect.

The Chamber of Commerce, Laurel, Ill., is interested in a project to construct and operate a paper bag manufacturing plant, to cost approximately $100,000 with machinery. It is understood that a company will be organized.

The City Council, Kearney, Neb., has rejected bids recently received for one 6-ton traveling crane, with hoist, trolley, etc., and purposes to ask new bids at an early date. The Burns & McDonnell Engineering Co., Interstate Building, Kansas City, Mo., is engineer.

The City Council, Woodriver, Ill., plans the installation of a Diesel engine, two pumping units for distributing service and two deep-well pumps, with accessory equipment, in connection with proposed extensions and improvements in the municipal waterworks, for which a fund of $50,000 is being arranged.

New England

BOSTON, Oct. 6.

THE first sign of real improvement in the local machine tool market was apparent the past week. As a direct result of equipment shown at the recent steel treaters' convention held here, seven new type Pratt & Whitney 16 in. lathes have been sold to a southern New England manufacturer, and other local exhibitors booked considerable business in one and two tools to a buyer. One firm dealing in new and used equipment has sold one or more machines every day for more than a week, mostly new lathes and used presses, a record not equalled in many months. Other sales include used boring machines and smaller equipment. A local shop, revamping its equipment, has purchased two used Barnes & Oliver turret lathes.

A representative of a company shortly to engage in salvaging gold from vessels sunk off the coast of France during the war is in the market for two used planers, a turret lathe, two milling machines, a gear cutter, a suction dredge and other equipment, approximately $350,000 to be spent by the company. Numerous other inquiries are on local dealers' books, while some old prospects have resumed activity.

Walter G. Hall, South Street, Fitchburg, Mass., plates, has started the construction of a one-story, 34 x 60 ft., brass foundry.

Plans are in progress for a three-story and basement, 40 x 150 ft., high school at Dorchester Heights, Boston, to cost $300,000. It will contain a mechanical training department. Joseph Driscall, 6 Beacon Street, is the architect.

The Ciccone Cast Stone Co., Northup Avenue, Providence, R. I., will build an addition to its plant, as well as a steel crane runway. A. J. Frappier, 319 Strand Building, Providence, is the architect.

Bids are wanted on power equipment, belting, shafting, hangers, pulleys, etc., for a four-story and basement, 64 x 180 ft., manufacturing plant to be erected by the Bristol Street Realty Co., Inc., 81 Bristol Street, Boston, plans for which have been drawn.

G. M. Jacobs, 4 Park Street, Boston, architect, has plans for a one and two-story automobile service, repair and garage building, 100 x 200 ft., at 59-75 Queensberry Street, estimated to cost $150,000 with equipment.

The Reed & Prince Mfg. Co., Duncan Avenue, Worcester, Mass., manufacturer of bolts, nuts, studs, etc., has awarded a general contract to the Fisker Carter Construction Co., Worcester, for a one-story addition.

The C. O. Jelliffe Mfg. Co., Southport, Conn., manufacturer of wire cloth and other wire goods, has awarded general contract to O. F. Burghart, Fairfield, Conn., for a one-story addition, 30 x 58 ft.

The Brockton Public Market, Purchase Street, New Bedford, Mass., has had plans drawn by LaBrode & Bullard, 888 Purchase Street, for a two-story automobile service, repair and garage building, 106 x 130 ft., estimated to cost $85,000.

The Scudder Coal Co., Plymouth, Mass., has plans for an addition to its coal-handling and distributing plant to cost $40,000, including loading and other equipment. G. P. Carver, Inc., 261 Franklin Street, Boston, is architect.

The Portland Gas Light Co., Portland, Me., plans extensions and the installation of vertical retorts and accessory apparatus estimated to cost $200,000.

The Squires Carbonized Rubber Co., Stratford, Conn., recently formed with a capital of $250,000, has acquired waterfront property on the Housatonic River, and will begin the erection of a new plant for the manufacture of rubber paving and flooring, reels, radio parts, etc., estimated to cost $45,000. Alfred and Nelson J. Wakelee, both of Stratford, head the company.

The United States Veterans' Bureau, Arlington Building, Washington, is asking bids until Oct. 21 for a one-story steam power house and other buildings at the institution at Rutland, Mass. F. T. Hines is director.

Richard H. Long, Framingham, Mass., is organizing a company to purchase and operate the former plant of the R. H. Long Motor Co., devoted to the manufacture of Bay State automobiles and parts. It is the intention to make improvements at the plant and to resume production at an early date.

The Crane Market

THE crane market continues quiet as far as new inquiries are concerned. Probably the outstanding overhead crane inquiry in the New York district is a request for prices from Thomas E. Murray, Inc., 55 Duane Street, New York, on two 200-ton overhead cranes with 25-ton auxiliaries for the New York Edison Co. There are a few inquiries that are active on locomotive cranes but prospective purchasers are not inclined to close business. The Wisconsin Steel Works, South Chicago, is inquiring for a 10-ton electric gantry crane and four overhead electric traveling cranes, including a 10-ton, 30-ton, 50-ton and 75-ton, for its new blooming mill.

In the Pittsburgh district the crane market does not show much life. The Jones & Laughlin Steel Corporation, which is to spend about $30,000 in changes in its South Side steel works, Pittsburgh, to facilitate duplexing, will buy a couple of new crane trolleys. There are three cranes soon to be closed for the Gary tube works, National Tube Co. and a number of cranes will be bought in connection with improvements at Pittsburgh district plants of the Carnegie Steel Co.

Among recent purchases are:

American Car & Foundry Co., New York, a 10-ton overhead traveling crane from the Shaw Electric Crane Co.

Lehigh & New England Railroad, Bethlehem, Pa., a 40-ton and 25-ton locomotive cranes from the Industrial works.

Southern Railway, Washington, a 3-ton, 25-ft. span, single I beam crane for Birmingham, from the Shepard Electric Crane & Hoist Co.

Seneca Falls Machine Shop, Seneca Falls, N. Y., a 5-ton, 28-ft. span, 3-motor overhead traveling crane from the Shepard Electric Crane & Hoist Co.

Camel Co., Chicago, one 15-ton and one 5-ton electric traveling crane from the Whiting Corporation.

Staley Mfg. Co., Decatur, Ill., one 4-motor three-cu. yd. 50-ft. span bucket crane from the Milwaukee Electric Crane & Mfg. Co.

Canadian National Railways, Montreal, Can., one 80-ton trolley and bridge from the Morgan Engineering Co.

National Foundry Co., Erie, Pa., one electric charging machine from the Morgan Engineering Co.

Donner Steel Co., Buffalo, N. Y., one electric traveling crane from the Morgan Engineering Co.

Ford Motor Co., Detroit, one electric traveling crane from the Morgan Engineering Co.

Bethlehem Steel Co., for the Lackawanna plant, two 20-ton, magnet handling cranes with 5-ton auxiliary, 94-ft. 3-in. span and two 20-ton, 3-motor cranes with 85-ft. span from the Cleveland Crane & Engineering Co.

Reeves Bros. Co., Alliance, Ohio, for new plant at Birmingham, Ala., one 75-ton, with 10-ton auxiliary and one 25-ton with 10-ton auxiliary, semi-mill type cranes 65-ft. span from the Pawling & Harnischfeger Co.

Cincinnati

CINCINNATI, Oct. 6.

SLOW but steady improvement in the machine tool industry is reported by practically all manufacturers. There is no outstanding development, orders coming from all sections of the country and from diversified industries. There have been a number of single tool purchases by railroads, but buying from this source was not heavy the past week. The largest order for some time was booked recently by a local manufacturer, consisting of about 40 special machines for the A. O. Smith Corporation. The Standard Sanitary Mfg. Co. is about ready to close on its list of equipment for a new brass finishing department at Louisville. The Louisville & Nashville Railroad is also expected to take action on its smaller list this week.

The Dayton Gas Co., Dayton, Ohio, is having plans prepared for new works, to manufacture artificial gas, estimated to cost $1,000,000. Construction will not begin until next spring. George Light is president of the company.

The Union Gas & Electric Co., Cincinnati, will go ahead with plans for erecting a large artificial gas manufacturing plant in that city and it is probable that contracts will be let before Jan. 1. The company expects to spend $2,000,000 in the improvement. W. W. Freeman is president.

Plans are being completed for the erection of a dirigible hangar at McCook Field, Dayton, Ohio. It is understood that bids for construction will be asked this fall.

Plans have been filed by the Lunkenheimer Co., Waverly Avenue, Cincinnati, manufacturer of valves, steam specialties, etc., for a one-story plant at 252 West Seventy-fourth Street, estimated to cost $50,000, for which a general contract has been let to the Fisher De Vore Co., Cincinnati. Harry Hake, Cincinnati, is architect.

The Hauser-Stander Tank Co., Emmen Street, Cincinnati, has awarded a general contract to the Austin Co., for a one-story plant, 60 x 300 ft., estimated to cost $32,000. Stephen Hauser, Jr., is president.

The Butler Utilities Co., Butler, Ky., recently organized, has acquired the local municipal power station and will operate as a private enterprise. Plans are under way for extensions and the installation of additional equipment. H. M. Owen is head. C. E. Record is engineer in charge.

The Blue Valley Coal Corporation, Madisonville, Ky., recently organized, has taken over about 200 acres of coal lands in this section. Plans are under way for extensions, to include the installation of electric power, mining machinery and auxiliary apparatus estimated to cost $35,000. J. A. Jonson is secretary and treasurer.

E. W. Cooper, 174 Third Avenue, North, Nashville, Tenn., engineer, has inquiries out for one electric traveling crane, from 50 to 60-ft. span, three motors, 220 volts, capacity 15 to 20 tons.

The Common Council, Mount Pleasant, Tenn., is said to be planning the installation of centrifugal pumping equipment in connection with a proposed new sewage works and system, estimated to cost $50,000.

Manual training equipment will be installed in the proposed high school to be erected at New Philadelphia, Ohio, estimated to cost $175,000, to be taken from a fund of $375,000 approved by the local Board of Education. Walker & Norwick, Dayton, Ohio, are architects.

The Fischer Special Mfg. Co., 2076 Reading Road, Cincinnati, manufacturer of screw machine products, is taking bids for a one-story and part basement addition, 127 x 145 ft. Tietig & Lee, Merchants Building, are architects.

The Pennsylvania Railroad Co., Philadelphia, is reported in the market for a 36-in. crank planer for its shops at Westerville, Ohio. Samuel Porcher is general purchasing agent.

Pittsburgh

PITTSBURGH, Oct. 6.

MACHINE tool sales are not numerous in this district and the saving factor is some pending business, regarded as almost certain to be placed, and a few fair-sized inquiries in connection with expansion plans for 1925. The Carnegie Steel Co. has bought a 26-in. turret lathe for its Homestead machine shop which was listed in an inquiry put out some time ago and appeared also in the one recently issued.

Bids will be received by the Board of Trustees, Western State Penitentiary, Northside, Pittsburgh, until Oct. 13 for two horizontal watertube boilers for the institution at Rockview. J. O. Stutsman is superintendent of construction.

The Federated Metals Corporation, Farmers Bank Building, Pittsburgh, a subsidiary of the Duquesne Reduction Co., is taking bids for a two-story and basement plant on Gross Street, 55 x 60 ft., estimated to cost $37,000. An office building will also be provided. Marks & Kann, Home Trust Building, are architects.

The Duquesne Light Co., 435 Sixth Avenue, Pittsburgh, has issued preferred stock for $15,000,000, a considerable portion of the proceeds to be used for extensions and improvements, including an addition to the Colfax electric generating plant, automatic power sub-stations, transmission lines, etc. A. W. Thompson is president.

The Huntington Iron Works, Huntington, W. Va., is said to have preliminary plans for enlargements and the installation of additional equipment. Improvements will also be made in the existing works. E. A. Reich is president.

The Richland Coal Co., Wheeling, W. Va., has acquired about 11,000 acres of coal lands in Putnam, Kanawha and Mason Counties, West Virginia, heretofore held by the Otto Marnet Coal & Mining Co., and plans for the installation of additional electric power and mining machinery, tipple equipment, etc. Johnson C. McKinley is president of the purchasing company.

The United States Engineer, Pittsburgh, will receive bids until Oct. 15 for one condenser, with combined air and cir-

culating pump, for the steamer Pennova, proposal 114, and one feed-water heater for the same vessel, proposal 113; until Oct. 10 for one duplex packed piston pump for Lock No. 5, Monongahela River, 6-in. cylinders, 5½-in. water pistons, 6-in. stroke, and until Oct. 25 for steel lock gates for new Locks Nos. 7 and 8, Monongahela River, circular 111.

Manual training equipment will be installed in the high school to be erected at Morgantown, W. Va., estimated to cost $600,000, for which bids will be asked on a general contract within a few weeks. Edward B. Lee, Chamber of Commerce Building, Pittsburgh, is architect.

Tentative plans are under way by the West Virginia & Maryland Gas Co., Cumberland, Md., for a local artificial gas plant to cost $500,000, for which considerable equipment will be required.

Philadelphia

PHILADELPHIA, Oct. 6.

ARRANGEMENTS have been completed by the Superior Gas Engine Co., Springfield, Ohio, for the purchase of the plant and business of the Otto Engine Works, Thirty-third and Walnut Streets, Philadelphia, manufacturer of gas engines and parts, for $1,000,000. The plant will be continued as a branch. The Superior company has also secured a controlling interest in the Diesel Gas Engine Works, Cologne, Germany, including patent rights of manufacture of Diesel engine units and will arrange production in this line at its American plants.

The Sinclair Refining Co., Widener Building, Philadelphia, has filed plans for the construction of an oil storage and distributing plant on Roberts Avenue, fronting on the line of the Chestnut Hill branch of the Pennsylvania Railroad. An automobile service and repair building for company trucks and automobiles will also be built.

Abraham Levy, 1208 Real Estate Trust Building, Philadelphia, architect, has plans for a two-story automobile service, repair and garage building, 68 x 235 ft., at 1515 North Broad Street, estimated to cost $125,000 with equipment.

The Navy Supply Office, Navy Yard, Philadelphia, will purchase an electric-operated heat-treating plant for installation at the local aircraft station, areo req. 747.

The Foreign Trade Bureau, Philadelphia Commercial Museum, has received the following inquiries: 42676, from the Primus Trunk & Bag Mfg. Co., 10, The Crescent, Port-of-Spain, Trinidad, British West Indies, desiring to get in touch with American manufacturers of painted tin sheets, paper-board bending machines, riveting machines, coppered split rivets, to purchase for cash at lowest prices; 42688, from Smith & Gibson, 98 Elizabeth Street, Brisbane, Australia, interested in reaching manufacturers of the following products, with view to purchases, cranes, electric appliances and apparatus, abrasives, hoists, hoisting engines, electric motors, machine tools, concrete machinery, conveying and elevating machinery, foundry equipment, hot-air pumping engines, pipe-cutting machinery, metal-working machinery, power transmission equipment, saws, blacksmiths', carpenters', cabinet-makers' tools, tinsmiths' tools, plumbers' tools, sash and door machinery, wood-working machinery, pipe cutters, iron and steel pipe, belting, shafting, waterwheels, water supply systems, wrenches, pumping machinery, builders' hardware and miscellaneous hardware; 42671, from R. Hueber, P. O. Box 1032, Panama City, Panama, desiring to receive catalogs and information regarding machinery for the manufacture of sand-lime brick; 42678, from Thomaides & Venieri, Rue Stamboul 18, Alexandria, Egypt, desiring to get in touch with manufacturers of belt or direct-driven mechanical coffee roasters, preferably working on charcoal, modern type.

C. M. Roswell, 1162 Marlyn Road, Philadelphia, machinery dealer, has inquiries out for three 1667 kva. transformers, 110,000-volt primary side, 33,000-volt, secondary.

The John A. Roebling Sons Co., Trenton, N. J., manufacturer of wire rope, cables, etc., has plans under way for a two-story factory and distributing branch, 200 x 400 ft., at San Francisco, estimated to cost $200,000 with equipment, for its Pacific Coast branch, known as the John A. Roebling Sons Co. of California, 646 Folsom Street, San Francisco. Frederick W. Quandt, Humboldt Bank Building, San Francisco, is architect.

The Troy Engine & Machine Co., Troy, Pa., has plans for additions, including a one-story testing works, pattern shop and loading platform. W. E. S. Dyer, Land Title Building, Philadelphia, is architect and engineer.

The Liberty Can & Sign Co., 124 North Water Street, Lancaster, Pa., manufacturer of tin and stamped metal products, has acquired a site for the erection of a new plant to cost $60,000.

Edward W. Peters, 103 Lower Mulberry Street, Danville, Pa., has inquiries out for a natural gas engine, 75 to 100 hp., with pulley, clutch and accessories, also for a crank shaft dresser.

The St. Michaels Industrial School, Whites Ferry, near Falls, Pa., has plans for a two-story shop addition, 50 x 100 ft., for which foundations will soon be laid. E. G. Perrott, 1211 Arch Street, Philadelphia, is architect.

Fire, Sept. 28, destroyed a portion of the plant of the Hertzler & Zook Co., manufacturer of farming implements, automobile parts, castings, etc., with loss estimated at $50,000 including equipment. The loss was concentrated in the machine shop, foundry, forge and blacksmith shop and paint shop. It is planned to rebuild.

Warner J. Steel, Bristol, Pa., operating a local textile mill, has had plans drawn by the Austin Co., Philadelphia, for a one-story steam power house, 40 x 50 ft., to cost $20,000.

The Bentley-Harris Mfg. Co., Conshohocken, Pa., recently organized, will operate a plant at Elm and Ash Streets for the manufacture of tubing and other electric and radio specialties. W. H. Bentley is president and Joseph H. Harris, secretary and treasurer.

The Queen City Iron Works, Allentown, Pa., recently organized by H. M. and C. H. Woelfel, has leased the plant of the McDermott Engineering Co., Whitehall and Jordan Streets, for the manufacture of fire escapes, light structural steel work and ornamental iron products. H. M. Woelfel was formerly connected with the Allentown Iron Works.

Buffalo

BUFFALO, Oct. 6.

THE first four days of October give promise of a good month for sellers of machine tools. No big items figure in the past week's business, but most of the individual machines sold were new. The Salisbury Co., Jamestown, has practically completed its buying except for screw products. Manufacturers of power saws report business fair, with many inquiries out upon which action will be temporarily postponed.

The North East Electric Co., Rochester, N. Y., is in the market for four Miner & Peck poppet drop hammers, complete with lifters.

The Niagara Motors Corporation, Dunkirk, N. Y., is inquiring for a small power punch press of very heavy ram pressure, not geared for blanking purposes, having 2 to 3-in. stroke.

Norman B. Hayes, Watertown, N. Y., has been awarded general contract for a two-story and basement high school at Lafargeville, N. Y., with manual training department. The local Board of Education is in charge.

A lathe, drill press, grinder and other equipment will be required by Funke & Hawley, Exchange Place, Batavia, N. Y., in connection with the erection of a two-story garage and service station.

The Springville Sand & Gravel Co., Springville, N. Y., is in the market for a 100 or 150-hp. gas engine, direct connected generator set, with auxiliary equipment.

A bond issue of $1,100,000 is being sold by the Lockport Light, Heat & Power Co., Lockport, N. Y., a portion of the proceeds to be used for extensions and betterments in its power plants and system. E. G. Connette is president.

The Doehler Die-Casting Co., Batavia, N. Y., has acquired the plant of the Batavia Rubber Co., adjoining its local works, for extensions. It is purposed to concentrate operations at this point and branch plants will be removed here, including the factory at Court and Ninth Streets, Brooklyn, N. Y. H. H. Doehler is president.

The Curtiss Aeroplane & Motor Co., Inc., 74 Kail Street, Buffalo, has tentative plans for the development of its local plant for the manufacture of complete airplanes, including parts, assembling, etc., concentrating such production at this point and maintaining the present works on Long Island for experimental operations. C. Roy Keys is manager.

The Barge Canal Dry Dock Co., Buffalo, affiliated with the Cowles Shipyard Co., 31 St. Clair Street, is planning for the early equipment of the first two sections of a new floating drydock, now in course of building at the shipyards of John E. Matton & Son, Waterford, N. Y., in connection with the establishment of a local yard for steel and wood vessel construction and repair of barge canal and lake steamers. Two other dock sections will be built and equipped later, each section to be 44 x 65 ft., electrically operated. The dock and shop facilities are estimated to cost $200,000. Benjamin L. Cowles is an official of the company.

Cleveland

Cleveland, Oct. 6.

MACHINE tool business shows an improved outlook for the month. Orders with local dealers continue light and mostly for single tools. Purchases during the week included several machines placed by the National Malleable Castings Co. for its Chicago plant. The Nickel Plate Railroad closed for part of the machines included in its recent list. A Cleveland lathe manufacturer took an order from a Chicago plant for four turret lathes. Another order by the same manufacturer was for five brass working lathes from a Southern company. About 50 machine tools in the plant of the Perfection Piston Ring Co., Ravenna, Ohio, were offered for sale during the week in bankruptcy proceedings and were bid in by a bank representing the bondholders.

The Bender Body Co., 6209 Barberton Avenue, Cleveland, will erect a one-story addition, 77 x 150 ft., for the manufacture of bus bodies. It is contemplating the purchase of additional equipment.

The Sterling Brass Co., 9600 St. Catherine Avenue, Cleveland, is planning the erection of a one and two-story building for factory and warehouse purposes.

The Kelley Island Lime & Transport Co. contemplates the rebuilding of a factory at White Rock, Ohio, involving an expenditure of $75,000.

E. M. Freese & Co., Galion, Ohio, manufacturers of brick and clay working machinery, are planning the erection of a foundry, 100 x 120 ft., and a three-story pattern storage building, 50 x 80 ft., at an estimated cost of $100,000. Lockwood, Greene & Co., Hanna Building, Cleveland, are the architects and engineers.

The plant of the Clark Chemical Co., Cleveland, manufacturer of industrial gases, was destroyed by fire Sept. 27. The company was closely connected in ownership with the Cleveland Crane & Engineering Co. The plant will be rebuilt on a larger scale and is expected to be in operation by the end of 60 days.

The Board of Education, Cleveland Heights, has completed preliminary plans for a combination technical and academic high school which will include laboratory shops. A. M. Corcoran is president of the board.

C. H. Hulme, 1924 East 105th Street, Cleveland, is inquiring for two No. 16 Blanchard surface grinders; three Landis grinders, 10 x 24 in., 10 x 36 in.; two Abrasive surface grinders; six Kempsmith plain millers; two No. 3A Rochester riveters; five No. O.G. and five No. O.O.G. B & S automatics.

The Timken Roller Bearing Co., Canton, Ohio, is in the market for one open-throat or alligator shear.

Milwaukee

Milwaukee, Oct. 6.

MACHINE-TOOL trade presents a brighter aspect, but only by comparison, for the volume of sales continues light. The demand is somewhat broader and encouragement is lent by the appearance of new buyers in the market. The call for equipment remains confined to scattering sources and no large-lot business has been reported. The industrial situation is improving and this furnishes the hope that business will be relatively more active during the winter than it was last year.

The Blue Point Mfg. Co., Racine, Wis., has been organized by members of the Motor Tool Specialty Co., Chicago, and is equipping a shop in the Sattley Building at Racine to manufacture an electro-plating machine designed and patented by Peter J. F. Batenberg, formerly chief engineer Mitchell Motors Co., Racine, who will be associated with the Blue Point company in an advisory way. The machine is made in the size of a flat-iron and is especially designed for repair work, replating and retouching plated articles.

Armour & Co., Chicago, will build a new boiler house for the Armour Soap Works Division, and are now buying equipment.

The B. & B. Mfg. Co., 1538 Racine Street, Racine, Wis., manufacturer of tools, dies, jigs, fixtures, etc., has acquired the entire business of the Sieverkropp Engine Co., and is moving its plant to the Sieverkropp works at DeKoven Avenue and the Chicago & North Western tracks. A number of additions will be made to the equipment layout. The manufacture and servicing of Sieverkropp gas engines will be continued under the direction of Henry R. Sieverkropp, who is retained as department manager. C. S. Bonin and Ernest Bruce are the proprietors of the B. & B. company.

The Board of Industrial Education, Beloit, Wis., has voted in favor of building and equipping a vocational high school, and an initial appropriation of $150,000 has been made. An architect will be selected shortly. A. B. McCreary is chairman of the board.

The Henry A. Poppert & Son Co., which is moving its plant from Milwaukee to Fond du Lac, Wis., occupying the former Bull Dog Tractor Co. works, is erecting an office addition and plans also to build a shop wing, 60 x 100 ft., one story, during the winter. The company manufactures brass and aluminum castings, wood and metal patterns, die castings and a steam pressure cooker. Henry A. Poppert is president and general manager.

The O. B. Level Works, Green Bay, Wis., has been incorporated by F. K. Griswold, A. F. Rousseau and associates, to manufacture a line of manual tools and appliances, chiefly wood and metal spirit levels. Quarters will be leased and some new and used equipment installed at once.

The Minneapolis, St. Paul & Sault Ste. Marie Railway Co. has designated Park Falls, Wis., as a new engine terminal, and will build a five-stall roundhouse, a service shop and an 80-car passing track.

The Board of Education, Kewaskum, Wis., has accepted the bid of the Immel Construction Co., Fond du Lac, Wis., to build the new $200,000 high school, designed by Robert A. Messmer & Brother, architects, 221 Grand Avenue, Milwaukee. Provision is made for manual training facilities.

The Hutchinson Scale Co., Sheboygan, Wis., has been organized by Gustav Buchen, H. L. Kaems and L. L. Liebel with $25,000 capital stock to manufacture weighing devices. No plans have been made for establishing a factory, but this is under consideration.

The M. & M. Paper Co., Marinette, Wis., has let the general contract to the C. R. Meyer & Sons Co., 50 State Street, Oshkosh, Wis., for a one-story machine room, 49 x 279 ft. D. G. Moon is chief engineer.

Detroit

Detroit, Oct. 6.

PLANS have been authorized by the Jewett Radio & Phonograph Co., Detroit, for a new factory on site recently acquired at Pontiac, Mich., the first unit to be two stories, 50 x 200 ft., estimated to cost $40,000. It will be devoted primarily to the manufacture of radio apparatus.

The Bohn Aluminum & Brass Corporation, Detroit, recently chartered under State laws to take over and consolidate the local plants and property of the Charles B. Bohn Foundry Co., 3651 Hart Street, and the General Aluminum & Brass Mfg. Co., 2512 East Grand Boulevard, has arranged for a bond issue of $1,500,000, the proceeds to be used to complete the merger and for expansion. It will also acquire the Machon Pattern & Die Co., 1731 Sixteenth Street, and the Peninsular Smelting & Refining Co., 4683 West Jefferson Street, both of which have been under the control of the Bohn company. The new corporation will specialize in the production of crank cases, transmissions, brass bushings, bearing gears and other aluminum and brass castings. Charles B. Bohn is president.

The Board of Education, Dearborn, Mich., is considering the installation of manual training equipment in its proposed three-story high school addition, 78 x 305 ft., estimated to cost $400,000, for which preliminary plans are in progress. G. D. Mason & Co., Standard Bank Building, Detroit, is architect.

Clarence A. Bradford, Kalamazoo, Mich., formerly vice-president and general sales manager Rex Paper Co., with local mill, is organizing a company to establish a plant for the manufacture of coated papers. The factory of the Dunkley Co., 120 x 260 ft., has been acquired and will be remodeled. Employment will be given to about 100. The company will operate with a capital of $200,000.

Smith, Hinchman & Grylls, 800 Marquette Building, Detroit, architects, are preparing plans for a four-story automobile service, repair and garage building, 100 x 200 ft., estimated to cost $175,000 with equipment.

The Eagle Spring Bumper Corporation, Clay Avenue and Grand Trunk Railroad, Detroit, manufacturer of automobile bumpers, is planning the erection of a two-story addition.

A general contract has been awarded to Bryant & Detwiler, local, by the Hudson Motor Co., Detroit, for a brick and steel power plant to cost $50,000.

The Lamb Co., 1938 Franklin Street, Detroit, is in the market for an open side planer, a vertical boring mill, two radial drills and a 20 x 24 in. crank shaper.

The Detroit Ice Machine Co., Marquette Building, Detroit, has awarded contract for a two-story machine shop, 80 x 84 ft., to cost $50,000 with equipment. A portion of the new building will be utilized as offices.

St. Louis

ST. LOUIS, Oct. 6.

CONTRACT has been let by the Motopower Mfg. Co., 3028 Highland Street, Kansas City, Mo., manufacturer of mechanical specialties, to A. I. Morris, New Centre Building, for the erection of a one-story plant near Prospect and Montgall Streets, estimated to cost $20,000.

The Board of Trustees, Washington University, Lindell Street, St. Louis, is having plans drawn for a one-story power plant with 175-ft. radial brick stack, estimated to cost $200,000 with machinery.

The Chandeysson Electric Co., 4092 Bingham Avenue, St. Louis, manufacturer of electrical equipment, has awarded a general contract to the Widmer Engineering Co., Laclede Gas Light Building, for a one-story plant, 50 x 120 ft., estimated to cost $50,000 with equipment.

The Common Council, Hartsville, Mo., plans an early call for bids for equipment for a proposed hydroelectric power plant, comprising a 42 kva. water turbine, alternator, switchboard, etc. The Alexander Engineering Co., Woodruff Building, Springfield, Mo., is engineer.

The Community Light & Power Co., Planters' Building, St. Louis, is said to have acquired a number of electric companies in the eastern part of the State and will consolidate the properties. Plans are under consideration for extensions to cost $1,250,000 including additional equipment.

The Common Council, Durant, Okla., plans the installation of centrifugal pumping machinery in connection with extensions in the municipal waterworks, estimated to cost $50,000. A special election has been called Oct. 21, to vote bonds.

The Continental Gas & Electric Corporation, Omaha, Neb., has acquired a controlling interest in the Kansas City Power & Light Co., Kansas City, Mo., heretofore held by the Illinois Power & Light Co. The new owner plans improvements and the installation of additional equipment. The expansion will be carried out in connection with a general merger of the two interests with the United Light & Power Co.; Columbus Railway, Power & Light Co. and the Lincoln Gas & Electric Co., Lincoln, Neb.

The Lawrence County Water, Light & Cold Storage Co. has plans for a new steam-operated electric power plant, with transmission line to Republic, Mo., and vicinity, estimated to cost $200,000.

A general contract has been awarded by the Atchison, Topeka & Santa Fe Railroad Co., Chicago, for an ice-manufacturing plant at Winslow, Ariz., to cost $200,000. Transmission, conveying, electrical power equipment and other machinery will be required. M. J. Collins is general purchasing agent.

E. T. Archer & Co., New England Building, Kansas City, Mo., consulting engineers, are preparing plans for a municipal light and power plant at Clinton, Mo., for which a bond issue is being arranged.

Indiana

INDIANAPOLIS, Oct. 6.

PLANS are being prepared by the Indiana Service Corporation, Traction Building, Fort Wayne, Ind., operating electric light and power properties, for a one-story machine shop, 200 x 200 ft., on Spy Run Avenue, estimated to cost $125,000 including equipment. H. V. Norford is company engineer.

The Roxana Petroleum Co., Arcade Building, St. Louis, will take bids immediately for the erection of a one-story storage and distributing plant at Indianapolis, estimated to cost $45,000. A one-story service, repair and garage building for company motor trucks will also be built. Kennerly & Stiegemeyer, Title Guaranty Building, St. Louis, are architects.

The New York Central Lines, Western Division, Chicago, has taken title to 400 acres at Elkhart, Ind., and has plans for the establishment of a new freight yard and shops to cost $6,500,000. It is said that approximately $1,500,000 will be expended during fall and winter and the remainder of the sum in 1925.

The Vonnegut Machinery Co., Indianapolis, has acquired the machine shop at 2106 North Senate Avenue, heretofore operated by other interests, for expansion. Improvements are planned.

The Board of Trustees, County Infirmary, A. M. Keas, superintendent, Elkhart, Ind., is taking bids until Oct. 22 for additional buildings at the institution, including a boiler plant, water softening and purifying plant, vertical boiler for laundry, one horizontal return tubular boiler and accessories, radial brick stack, 100 ft. steel tower, and 25,000-gal. water tank. Hubert Miller, Monger Building, Elkhart, is architect.

The Randolph Brick Co., Saline City, Ind., recently formed with a capital of $300,000, has engaged J. H. Wildermuth, Gary, Ind., architect, to prepare plans for local works to include machine shop and power house, estimated to cost $100,000. The company is represented by Urban C. Stover, 804 Guaranty Building, Indianapolis, attorney.

South Atlantic States

BALTIMORE, Oct. 6.

PRELIMINARY plans are being considered by the Standard Oil Co., 500 St. Paul Street, Baltimore, for a new oil storage and distributing plant at Welch Point, Elkton, Md., to cost $85,000 including equipment.

The general purchasing officer, Panama Canal, Washington, will receive bids until Oct. 23 for motors, magnet wire, pipe fittings, valves, cocks, pumps, journal jacks, anchor chain, steel conduit, eye bolts, shackles, metal desks and cabinets, wire cloth, etc., Panama Circular 1633.

M. L. Duncan, 420 Seward Square, Washington, is making inquiries for a rock crusher, portable or stationery type, gasoline engine driven.

The R. D. Cole Mfg. Co., Newnan, Ga., manufacturer of steam engine boilers, tanks and other plate products, has plans for three one-story shop additions, 60 x 300 ft., and two, 60 x 100 ft. A permit for the largest unit has been issued and foundations will be laid at once; two electric traveling cranes will be installed in addition to other machinery.

The United Railways & Electric Co., Continental Building, Baltimore, has plans under way for a one-story automatic power substation at 305-7 Guilford Avenue, 35 x 63 ft., to cost $42,000 with equipment.

The Bureau of Supplies and Accounts, Navy Department, Washington, will take bids until Oct. 21 for one electrically-operated hoist, with spare parts, for the Puget Sound Navy Yard, schedule 2718; for 250 wire boiler tube brushes for the same yard, schedule 2723; for 19,600 galvanized buckets for Eastern and Western yards, schedule 2719; for miscellaneous gages for Eastern and Western yards, schedule 2737.

The Board of Education of Montgomery County, Rockville, Md., is considering the installation of manual training equipment in the high school to be erected at Bethesda, Md., for which bids will soon be asked on a general contract. Russell E. Mitchell, Homer Building, Thirteenth and G Streets, N. W., Washington, is architect.

The Georgia Talc Co., Asheville, N. C., is planning for the installation of equipment at its properties and has inquiries out for a screw conveyor, four or five roll air compressor, shafting, split steel pulleys and other apparatus.

The Baltimore Copper Smelting & Rolling Co., Fifth Avenue and Second Street, Baltimore, will erect a one-story addition, 258 x 312 ft., estimated to cost $175,000.

The purchasing agent, Post Office Department, Washington, is taking bids until Oct. 17 for 17 bench drill presses and 17 bench riveting machines.

The Mullins Lumber Co., Mullins, S. C., is in the market for two 150-hp., high pressure, horizontal return tubular boilers and one 150-hp. Corliss engine, with accessories.

John A. Sullivan and Mark Trammell, both of Chatsworth, Ga., are organizing a company to establish and operate a local commercial talc plant. Property at Fort Street and the Louisville & Nashville Railroad has been acquired, formerly used by the Barnett Co., and will be remodeled for a mill. It is purposed to install sawing, grinding, pulverizing, conveying and other machinery at an early date. The Chatsworth Commercial Club is interested in the project.

The Common Council, Mount Holly, N. C., plans the installation of electrically-operated pumping machinery at its waterworks, in connection with extensions estimated to cost $80,000. The Carolina Engineering Co., Charlotte, N. C., is engineer.

R. S. Armstrong & Brothers, Atlanta, Ga., machinery dealers, have inquiries out for two 150-hp. horizontal return tubular boilers.

The Autoline Oil Co., 32 South Street, Baltimore, organized a few months ago to take over the William C. Robinson & Son Co., and the Pittsburgh Oil Refining Co., has arranged for a preferred stock issue of $225,000, a portion of the proceeds to be used for extensions and betterments. The company specializes in the production of lubricating oils and greases, with works at Caroline and Dock Streets, Baltimore.

The Asheville Power & Light Co., Asheville, N. C., plans for extensions and improvements in plants and systems to cost $160,000.

The chief of air service, War Department, Washington, will take bids until Oct. 28 for miscellaneous engine parts, including crankshaft control connecting rods, unfinished pistons, studs, crankshaft gears, camshaft and gun control driving shafts, primer tubes, oil pressure gage tubes, oil pump driving gears and shafts, pressure relief valve springs, water pump shafts, gun mounts, oil tank vents, timer head levels, etc., circular 2517; until Oct. 27 for 290 two-blade propellors, proposal 2519, and until Oct. 21 for 50 air speed indicators, 100 engine gage units, 100 aircraft chronometric tachometers, 100 altimeters and 150 oil pressure gages, proposal 2520.

The General Gas & Electric Co., 50 Pine Street, New York, operated by W. S. Barstow & Co., 50 Pine Street, New York, recent purchaser of the Columbia Railway, Gas & Electric Co., Columbia, S. C., and affiliated interests, including the Parr Shoals Power Co., is reported to have acquired a site on the Broad River at Parr Shoals for the construction of a steam-operated electric generating plant to cost $1,000,000. It will be operated under the direction of the Parr Shoals Power Co.

The Gulf Refining Co., Frick Annex, Pittsburgh, has acquired a 4-acre tract on Dowd Street, Charlotte, N. C., and plans the erection of a new motor truck works for company cars. It will include a number of shops for repairs, parts, assembling, etc., with reconditioning department, to cost $90,000.

Gulf States

BIRMINGHAM, Oct. 6.

ABOUT 37 acres has been acquired by the Celotex Co., Amesville, La., adjoining its present plant for the manufacture of wallboard products from waste sugar cane, and plans are in progress for a number of new buildings to increase the capacity from 350,000 to 1,000,000 ft. per day, estimated to cost $1,500,000 with machinery, power equipment and other apparatus.

J. W. Wrather, Amarillo, Tex., and associates, are completing plans for a new oil refinery at Panhandle, Tex. It will have a capacity for handling about 1500 bbl. of crude oil per day, with estimated cost placed at $160,000 including machinery.

The City Council, Dallas, Tex., has preliminary plans for the construction of a municipal hydroelectric generating plant in connection with the proposed reservoir for the local waterworks system at Garza, Denton County, where 1400 acres has been purchased. The entire project will cost approximately $5,000,000. Harry H. Gowins, city water commissioner, is active in the enterprise.

The G. A. Peters Machinery Co., Inc., Canal Commercial Bank Building, New Orleans, is in the market for about 50,000 metal drums, each 52-gal. capacity.

Traveling cranes, loading and unloading machinery and other equipment with power house will be installed by the Southern Pacific Railroad Co., Houston, Tex., at its proposed new ship and rail terminals on the Houston ship channel at Clinton, Tex., estimated to cost $1,000,000.

The Daytona Public Service Co., Daytona, Fla., is contemplating the construction of a new steam-operated electric generating plant on the waterfront, south of the city limits, estimated to cost $500,000. The present city power station will be removed to the new location.

The Knight Iron & Metal Co., First Avenue, Birmingham, has purchased about 12 acres at Second Avenue and Eleventh Street and will erect a new plant. The present works will be removed to this site.

The Common Council, Grapevine, Tex., plans the installation of centrifugal pumping equipment at its proposed municipal waterworks plant, for which a bond issue of $60,000 has been approved.

Morrison & McCall, Inc., Vernon, Tex., will erect a one-story ice-manufacturing plant estimated to cost $45,000 with machinery.

The Board of Education, San Antonio, Tex., will soon ask bids for the erection of a one-story unit at the Edgar Allan Poe junior high school, to be used exclusively for manual training work. Phelps & DeWees, Gunter Building, are architects.

The Kier-Nickels Garage Co., Houston, Tex., has leased a three-story building totaling 100,000 sq. ft., to be erected by R. S. Sterling and associates at Louisiana and Texas Avenues, for a service, repair and garage building. It will cost approximately $300,000. Sanguinet, Stants, Hedrick and Gottlieb, Carter Building, are architects.

Plans are being drawn for R. W. Porter, Blackwell, Okla., and associates, for a $100,000 light, power and ice-manufacturing plant at Crowell, Tex. Boilers, transmission, conveying and hoisting machinery, etc., will be required.

Pacific Coast

SAN FRANCISCO, Oct. 1.

BIDS will be received by H. P. Sargeant, secretary, Merced Irrigation District, Barcroft Building, Merced, Cal., until Oct. 16 for the following electric machinery for a hydroelectric power project: Two variable head water turbines, 257 r.p.m., complete with governors; two electric generators, 15,620 kva., with exciters and Kingsbury truss bearings; one switchboard complete with transformers, etc.; four water-cooled transformers, 10,400 kva., 11,000 volts to 69,000 volts; four 12,000 amp., 11,000-volt circuit breakers; two 55-cell storage batteries, with 5 kw. motor-generating set and 120 kva. lightning arrester. R. V. Meikle is chief engineer for the district.

The Baash-Ross Tool Co., Taft, Cal., will begin the erection of a new plant at Eighth and Main Streets for the manufacture of a line of oil well fishing tools estimated to cost $25,000.

The Pacific Fruit Express Co., 65 Market Street, San Francisco, will soon take bids for the erection of its proposed refrigerator car shops at Nampa, Idaho, with power house, estimated to cost $450,000 with equipment.

The California-Oregon Power Co., 454 California Street, San Francisco, is completing arrangements for the construction of a hydroelectric power house on Clear Water Creek, Douglas County, Ore., with initial capacity of 14,000 hp., estimated to cost $650,000.

The Laher Auto Spring Co., 167 Hayes Street, San Francisco, has purchased property at Twenty-sixth and Magnolia Streets, Oakland, Cal., as a site for a new plant to cost approximately $55,000 with equipment.

The California Portland Cement Co., Colton, Cal., has plans for a new local storage and distributing plant to cost $200,000 including equipment. Main offices of the company are in the Pacific Mutual Building, Los Angeles.

Electric motors, controls, conveying and other machinery will be installed in the three-story printing plant, 140 x 200 ft., to be erected by the *Evening Herald*, Los Angeles, estimated to cost $200,000. Morgan, Walls & Clemens, Van Nuys Building, are architects.

The Ulmer Mfg. Co., Santa Ana, Cal., manufacturer of mechanical specialties, has awarded a general contract to the Union Iron Works, Los Angeles, for a new plant, with main building, 90 x 150 ft.; one-story foundry and one-story machine shop.

The Delco Ice Co., San Francisco, will begin the erection of a new ice-manufacturing plant at El Centro, Cal., with initial output of 50 tons per day. It is purposed to build similar plants at Calexico, Brawley and Mexicali, all in the Imperial Valley district.

The Monarch Forge & Machine Works, Fourth and Flanders Streets, Portland, has awarded contract to George E. Mangas, Spalding Building, for a one-story machine shop at 890 York Street, to cost $25,000.

Canada

TORONTO, Oct. 6.

WHILE more life is appearing in the machine-tool market, sales are mostly for single tools. Inquiries, however, are increasing and dealers are of the opinion that with orders already booked and prospective business the demand for machine tools will continue for some time. During the week a number of small lists for railroad shops appeared, mostly for tools for replacement. Although the demand for electrical equipment is low, a number of inquiries are before the trade on export account and it is expected that considerable new business will be derived from this source. Small tools are in fair demand.

L. Imbleau & Son, Renfrew, Ont., will build a foundry addition and are interested in equipment.

W. J. Irwin, Omemee, Ont., is in the market for a lathe, chuck, compressor and other tools.

The White Metal Mfg. Co., Hoboken, N. J., has purchased a site in the eastern harbor industrial area, Toronto, and will erect a plant. It will give employment to about 150 men, will be of concrete and steel construction and cost $250,000.

St. Thomas, Ont., will build one-story brick power house to cost about $50,000. W. C. Miller is city engineer.

McKay & Fraser, Ltd., New Glasgow, N. S., will erect a plant for the manufacture of automobile springs, etc., and are interested in equipment. R. H. McKay is purchasing agent.

Mather & Nelson, R. R. No. 8, Peterboro, Ont., are in the market for a milling machine, lathe, grinder, etc.

J. McLean, Norwood, Ont., is in the market for a milling machine and a planer.

F. Leplante, Summerstown, Ont., will purchase equipment for a wood-working factory, also a small lathe.

A. B. Armstrong, Warkworth, Ont., will purchase a lathe, compressor, and miscellaneous small tools.

Carson Brothers, Campbellford, Ont., are interested in purchase of drill press, grinder and small tools.

Seal Brothers, Stone Street, Gananoque, Ont., are in the market for equipment for a garage and automobile repair shop. A. Seal is purchasing agent.

STEEL AND INDUSTRIAL STOCKS

The range in prices of active steel and industrial stocks from Monday of last week to Monday of this week was as follows:

Allis-Chalmers ..	59½	61¼	Int. Har. pf.....	111⅛	111½
Allis-Chal. pf....	99	99	Jones & L'lin pf.	113¼	113¼
Am. B. S. & Fdy.	81½	82	Lima Loco.	59⅛	61½
Am. Can 127½		134	Midvale Steel ...	25	26
Am. Can pf.....115¾		116⅝	Nat.-Acme	5¼	5½
Am. Car & Fdy..166		168¾	Nat. En. & Stm.	20½	20⅝
Am. C. & F. pf..120		120	Nat. En. & S. pf.	70½	70½
Am. Locomotive.	78½	81⅜	N. Y. Air Brake	42¼	44
Am. Loco. pf....120½		120½	Otis Steel	7¼	7⅝
Am. Radiator ..116¼		118¼	Otis Steel pf....	46⅛	47
Am. Steel Fdries.	35⅝	37½	Pressed Stl. Car	44⅝	45½
Am. Stl. Fd. pf..106¼		106¼	Pressed Steel pf.	72¼	72½
Bald. Loco. 121¼		124¾	Replogle Steel ..	11¼	12
Beth. Steel	42¾	45	Republic	44⅝	46
Beth. Stl. 7% pf.	93½	94	Republic pf.	86	86
Beth. Stl. 8% pf.107		107⅞	Sloss-Sheffield ..	70½	73½
Br. Em. Steel...	2⅜	2⅝	Sloss-Sheffield pf.	89	90
Br. Em. Stl. 2 pf.	8	9	Superior Steel ..	27	27⅛
Chic. Pneu. Tool	85¾	86	Transue-Wms. ..	30⅛	30½
Colo. Fuel	41¾	44⅞	Un. Alloy Steel..	22	22¼
Crucible Steel ..	55¼	56½	U. S. Pipe.....	112	116⅝
Crucible Stl. pf..	88½	90¼	U. S. Pipe pf....	97	98½
Gen. Electric ...255½		262½	U. S. Steel.....	107⅝	109½
Gt. No. Ore Cert.	29½	30⅜	U. S. Steel pf...	122¼	122⅝
Gulf States Steel	70¼	73½	Vanadium Steel.	23	24¾
Inland Steel	35½	36¼	W'house Air Br.	92¼	95
Int. Har.	93	95¾	Y'gstown S. & T.	66⅞	66⅞

Industrial Finance

The Woodward Iron Co., Woodward and Birmingham, Ala., maker of pig iron, has sold $2,400,000 5 per cent first and consolidated mortgage sinking fund bonds, a part of an authorized issue of $12,000,000, to New York and Boston bankers, who have sold the bonds to investors at 85½ and accrued interest, to yield 6.1 per cent on the investment. The bonds are dated Jan. 1, 1912, and mature in 1952. The balance is reserved to retire Birmingham Iron Co. bonds and for future improvements to properties.

C. S. Newhall and D. J. McLaughlin, receivers for the Cyclops Steel Co., have completed their investigation of the company's affairs and announce that the business will be continued along the same general lines. The operating personnel has been retained intact. The mill and foundry at Titusville, Pa., is running at satisfactory capacity and orders are being received in considerable volume.

The Central Foundry Corporation, Milwaukee, with works at 652 Seventy-seventh Avenue, West Allis, has been placed in charge of M. S. Rausch, 1012 Majestic Building, Milwaukee, as receiver, by a decree of the Milwaukee County Circuit Court. Notice has been issued to creditors that claims must be filed before March 11, 1925.

Holders of first mortgage bonds of the Milwaukee Rolling Mills Co., which some time ago was acquired by the Inland Steel Co., Chicago, have been notified that the entire issue has been called for redemption on Nov. 1. A premium of 2 per cent will be paid. Chris. Schroeder & Sons Co. and Walter Schroeder are joint trustees.

Sales by the Vulcan Detinning Corporation in the quarter ending June 30, amounted to $360,396, which compares with $528,564 for the previous three months and $416,178 for the corresponding period last year. Net operating income for the quarter was $30,434, against $46,730 for the previous quarter and $67,346 for the like three months a year back. Net income, after taxes, etc., aggregated $47,731, equivalent to $1.97 a share on the combined common and preferred A capitalization. Net income the previous quarter was $45,095, or $1.86 a share, and for the three months ended June 30, 1923, $62,240 or $5.36 a share. Net income for the first six months this year was $92,826; for the first half of 1923 it was $129,945. Surplus on June 30, last, stood at $730,703.

Anderson Foundry & Machine Co. Reorganized

The Anderson Foundry & Machine Co., Anderson, Ind., subsidiary of the R. L. Dollings Co. of Indiana, which has been operated by W. T. Durbin as receiver for more than a year, will be turned over to a new corporation composed of creditors and stockholders of the Anderson company as a result of an order recently issued by the Madison Circuit Court. The company will be known as the Anderson Oil Engine Co. Mr. Durbin will retire from the plant and J. W. Cooney, Irvine, Pa., a manufacturer and one of the largest creditors of the company, will become manager and conduct the operations of the plant. Directors of the new corporation will include C. F. Lesch, Titusville, Pa.; J. M. Green, Cincinnati; E. E. McGriff, Bluffton, Ind.; I. E. May, Anderson; Luther F. Pence and Burt McBride of Indianapolis. Mr. McBride is receiver for the R. L. Dollings Co. in Indiana. The new corporation will have capital stock of $1,400,000, of which $600,000 in preferred stock will be applied to the Dollings claims and $800,000 of common stock will be distributed among creditors and stockholders. There will also be a bond issue of $350,000 to take up about $200,000 of commercial claims and expenses of receivership and to provide immediate working capital.

Industrial Notes

John E. Roberts & Son, 1284 East Second Street, Jamestown, N. Y., announce their removal to 174-178 Hopkins Avenue, and a change in name to the Roberts Machine Co., operating a machine shop and machinist plant. John E. Roberts is president and general manager.

The White Mfg. Co., maker of case hardened brake pins and bushings for railroad trucks and other railroad car parts, has completed a new factory at Elkhart, Ind., into which it moved Oct. 1, from its previous location at Goshen, Ind. The new plant is constructed of brick, steel and cement and is nearly twice the size of the previous factory.

The Norma-Hoffman Bearing Corporation, Long Island City, New York, has officially opened its new Glenbrook, Conn. plant, under construction for several months. Installation of machinery will shortly begin.

The New Process Gear Co., Syracuse, N. Y., has purchased the plants of the Adams Axle Co. and the Findlay Engineering & Mfg. Co., both located at Findlay, Ohio, and will operate them as branch plants.

The L. C. Smith & Brothers Typewriter Co., Syracuse, N. Y., has been sold to financial interests of New York, approximately $5,000,000 having been involved in the transaction. Ford, Bacon & Davis, engineers and appraisers, represent the new owners. Plans call for the organization of a new corporation which shall retain the name L. C. Smith & Brothers. W. L. Smith, president, will withdraw from active management in the company.

Trade Changes

William Breeden, who recently went to Los Angeles, Cal., to represent Rolph, Mills & Co. in the sale of pig iron, coke, steel and tubes, has opened an office in the Hibernian Building, 408 South Spring Street, Los Angeles.

The Hanna Engineering Works, 1765 Elston Avenue, Chicago, manufacturer and distributor of riveting machines, air hoists, sand sifters, I-beam trolleys, Mumford molding machines, Hanna mold dryers and Milwaukee sprue cutters, is now represented in the Provinces of Quebec, New Brunswick, Nova Scotia and Prince Edward Island and eastern Ontario, Canada, by Williams & Wilson, Ltd., 84 Inspector Street, Montreal.

The Central Welding Co., Lansing, Mich., has moved into its new plant at Turner and Howard streets.

The W. E. Caldwell Co., Louisville, Ky., has changed its address from Brook and D Streets to 200 East Brandeis Avenue.

NEW TRADE PUBLICATIONS

Blower and Suction Cleaner.—Martindale Electric Co., Box 35, Lakewood Branch, Cleveland. Two-page pamphlet describing the "Imperial Blow-er Clean" for cleaning generators, motors, switches and other equipment. Commutator stones in a variety of sizes and handles are also illustrated.

Gears.—W. A. Jones Foundry & Machine Co., 4401 West Roosevelt Road, Chicago, has issued a catalog of 224 pages, and designated as No. 29. A wide variety of large gears and small pinions of cast iron, cast steel, forgings, rawhide and bakelite, with cut or molded teeth, are listed, as well as spur gear speed reducers and inclosed worm gear drives.

Bolts and Nuts.—Buffalo Bolt Co., North Tonawanda, N. Y. Catalog of 90 pages. List prices are given on carriage and machine bolts, coach, skein and hanger screws; blank bolts; bolt ends; step bolts; automobile hub and other bolts, as well as U. S. standard square nuts, hexagon nuts and c.p.c. and T square nuts. The catalog is printed on heavy paper, is illustrated, and is thumb indexed. A chain discount calculator, figured on the basis of one dollar, accompanies the catalog.

Portable Electric Drills and Grinders.—Van Dorn Electric Tool Co., Cleveland. Booklet of 60 pages under the title of "Higher Holeage—Lesser Costs." Unusually attractive publication in two colors showing in detail the parts of and the application of the company's portable tools. Pages are devoted to the operation and care of drills, the "cost of carelessness," and the proper sharpening of twist drills. Several types of electric grinders are shown and complete specifications of the company's electric tools included.

Lift Truck Platforms.—Lewis-Shepard Platform Corporation, 563 East First Street, Boston, 27. Folder describing platforms with pressed steel legs.

Twist Drills.—Cleveland Twist Drill Co., Cleveland. Booklet giving speed and feed tests of the company's Cle-Forge high speed drills in cast iron, machinery steel and chrome nickel steel. The tests were made at the American Railway Association Convention, held in Atlantic City, N. J., June 11 to 18.

Lubricating Devices and Oil Cups.—Gits Brothers Mfg. Co., 1940 South Kilbourne Avenue, Chicago. A 56-page catalog listing a wide variety of oil hole covers, oil cups, oil gages and gravity and capillary attraction feed oilers. Illustrations are numerous and include line drawings showing detail construction. For all types of the devices shown, tables of dimensions are given.

Blowers.—Buffalo Forge Co., Buffalo. Leaflet describing variable speed electric blower with new inclosed regulator for blowing forge fires and small furnaces.

Steam Traps.—Pryko, Inc., 39 Cortlandt Street, New York. Bulletin giving list prices, ratings and dimensions of medium, low and high-pressure traps. Illustrations include sectional and phantom views of the traps.

Strip Metal Straightener and Shear.—Blake & Johnson Co., Waterbury, Conn. Circular describing semi-automatic machine which takes strip metal from the coil and straightens and cuts it rapidly. Various sizes for several gages and widths are available.

Evaporator.—Griscom-Russell Co., 90 West Street, New York. Leaflet describing the G-R Bentube evaporator for the production of pure distilled water for boiler feed makeup. There is a shell and vapor dome of welded steel plate, with tube headers of cast iron into which are expanded seamless drawn Admiralty tubes, which are bowed. The steam enters the tubes and evaporates the raw water in the shell. The bowed tubes distort with temperature changes, cracking off accumulated scale. The tube bundle consists of a series of independent vertical sections which may be removed conveniently.

Cast Iron Storage Tanks.—Conveyors Corporation of America, 326 West Madison Street, Chicago. Booklet of 11 pages, showing several installations of cast iron tanks for the storage of ashes, coal and other materials. Square tanks are also available. Sizes and weights of cylindrical tanks and supporting structure are given.

Blacksmith Hammers.—Blacker Engineering Co., Inc., Grand Central Terminal, New York. Booklet describing the company's type B hammers, the features of which were described in THE IRON AGE of Nov. 9, 1922. A type C hammer, which is the same as the type B except for lateral traverse of the head; a type D hammer for repetition work and small stampings, and a type DH machine are also described and illustrated.

Metal Cleaning.—Cowles Detergent Co., Lockport, N. Y. Fundamental principles about the science of cleaning occupy the greater portion of this 16-page pamphlet, which takes up cleaning requirements, water conditions, temperature and time elements, and the effect on different metals of cleaning solutions. Oil and dirt, as well as paint, are given attention and general directions are pointed out for using the Esco cleaner.

Factory Heaters.—Buffalo Forge Co., Buffalo, N. Y. Bulletin containing data for the factory management and small shop owner regarding the use and advantages of unit heaters, known as Breeso-Fin heaters. The text gives tables of capacities and dimensions and discusses the question of temperature control.

Universal and Blooming Mills.—Mackintosh-Hemphill Co., Pittsburgh. Six-page folder featuring the universal mills and blooming mills which have been turned out by this company in the past 53 years. On the first page is a photograph, taken last June, of the first blooming mill ever produced by the company, a 36-in. mill installed in 1877 by Shoenberger & Co. The list of mills includes 41 universals and 64 blooming mills, or an average of about two per year over the entire period. 1889, 1890 and 1903 were the banner years, with five mills installed in each case.

Heat Treating Furnaces.—Tate-Jones & Co., Pittsburgh. Bulletin 163B of four pages features underfired heat treating furnaces for the use of either gas or oil and covers furnaces for pack hardening, case hardening and annealing. Among the items of special attention are the delicately balanced doors, carborundum piers, rigid door checks and two courses of insulation.

Electric Heat Treating Furnaces.—Tate-Jones & Co., Pittsburgh. Bulletin 175 of 12 pages covers standard designs and furnaces built for special work. Among the advantages indicated are the exact duplication of heating cycles with uniformity in production, elimination of gases, dirt, etc., long life of refractories and sensitive, automatic and accurate temperature control. Tables of specifications accompany blueprints of the standard equipment, showing various sizes for various purposes.

Roller Bearings.—Chandler Machine Co., Ayer, Mass. Twelve-page catalog dealing with bearings of low friction and the saving in power bills through their use. Various sizes and applications are indicated, together with a table of dimensions and list prices. Data concerning countershafts occupy two pages.

Steel Lumber.—General Fireproofing Co., Youngstown, Ohio. No. 1, Vol. 8, of the company's publication, "The Right Angle," contains articles illustrating and describing the use of steel lumber for school house floors and partitions and steel tile floor construction for schools; also contains data on steel joists and drawings of construction details.

Centrifugal Pumps.—Allis-Chalmers Mfg. Co., Milwaukee. Bulletin No. 1632-G entitled "Centrifugal Pumps and Pumping Units," is a revised edition of previous bulletins on the subject. Highly illustrated and descriptive of all types of centrifugal pumps, with particular emphasis on their application to industrial plants of various kinds.

Acetylene.—International Oxygen Co., Newark, N. J. A small pamphlet describing "Sunray" acetylene.

"The Electric Welding of Large Storage Tanks," a paper delivered by Harold C. Price, Bartlesville, Okla., before the American Institute of Mining and Metallurgical Engineers, February, 1924, is being circulated by the Wilson Welder & Metals Co., Inc., Wilson Building, Hoboken, N. J. The electric welding of roofs and bottoms of oil storage tanks is discussed, the data and conclusions having been obtained from observations at Texas City, Tex., and Tonkawa and Burbank, Okla. The discussion of the paper is included.

A cutting chart of recommended speeds, blade equipment, cooling compound, and the type of the company's band or other metal sawing machines for various materials is being issued by the Racine Tool & Machine Co., Racine, Wis. Information relating to the blade includes pitch of blade (teeth per inch), gage, width and length of blade. The material listed includes non-ferrous metals, cast iron, iron bars, wrought pipe, rubber, steel alloys and various forms of steel, including tubing. The size of the chart is 11 x 14 in. General rules for metal cutting are included.

Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of items the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE, under the general heading of "Iron and Steel Markets" and "Non-Ferrous Metals."

Bars, Shapes and Plates

	Per Lb.
Bars:	
Refined iron bars, base price	3.24c.
Swedish charcoal iron bars, base	6.75c. to 7.25c.
Soft steel bars, base price	3.24c.
Hoops, base price	4.49c.
Bands, base price	3.99c.
Beams and channels, angles and tees, 3 in. x ¼ in. and larger, base	3.34c.
Channels, angles and tees under 3 in. x ¼ in., base	3.24c.
Steel plates, ¼ in. and heavier	3.34c.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger	3.25c.
(Smooth finish, 1 to 2½ x ¼ in. and larger)	3.50c.
Toe-calk, ½ x ⅝ in. and larger	4.20c.
Cold-rolled strip, soft and quarter hard	7.00c.
Open-hearth spring steel	4.50c. to 7.00c.
Shafting and Screw Stock:	
Rounds	4.05c.
Square, flats and hex.	4.55c.
Standard tool steel, base price	15.00c.
Extra tool steel	18.00c.
Special tool steel	23.00c.
High-speed steel, 18 per cent tungsten	70c.

Sheets

Blue Annealed

	Per Lb.
No. 10	3.89c.
No. 12	3.94c.
No. 14	3.99c.
No. 16	4.09c.

Box Annealed—Black

	Soft Steel C. R., One Pass Per Lb.	Blued Stove Pipe Sheet Per Lb.
Nos. 18 to 20	4.30c. to 4.45c.	.....
Nos. 22 and 24	4.45c. to 4.60c.	5.10c.
No. 26	4.50c. to 4.65c.	5.15c.
No. 28*	4.60c. to 4.75c.	5.25c.
No. 30	4.70c. to 4.95c.	.....

Galvanized

	Per Lb.
No. 14	4.70c. to 4.85c.
No. 16	4.85c. to 5.00c.
Nos. 18 and 20	5.00c. to 5.15c.
Nos. 22 and 24	5.15c. to 5.30c.
No. 26	5.30c. to 5.45c.
No. 28*	5.60c. to 5.75c.
No. 30	6.10c. to 6.25c.

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

Welded Pipe

Standard Steel	Black	Galv.	*Wrought Iron*	Black	Galv.
½ in. Butt	—41	—24	⅛ in. Butt	— 4	+19
¾ in. Butt	—46	—32	¼ in. Butt	—11	+ 9
1-3 in. Butt	—48	—34	1-1½ in. Butt.	—14	+ 6
2½-6 in. Lap.	—44	—30	2 in. Lap	— 5	+ 14
7-8 in. Lap	—41	—11	2½-6 in. Lap.	— 9	+ 9
9-12 in. Lap	—34	— 6	7-12 in. Lap	— 3	+16

Bolts and Screws

Machine bolts, cut thread,
50 to 50 and 10 per cent off list
Carriage bolts, cut thread,
40 to 40, 10 and 10 per cent off list
Coach screws, 50 to 50 and 10 per cent off list
Wood screws, flat head iron,
75, 20, 10 and 10 per cent off list

Steel Wire

Base Price* on No. 9 Gage and Coarser	Per Lb.
Bright, basic	4.25c. to 4.50c.
Annealed soft	4.50c. to 4.75c.
Galvanized annealed	5.15c. to 5.40c.
Coppered basic	5.15c. to 5.40c.
Tinned soft Bessemer	6.15c. to 6.40c.

*Regular extras for lighter gage.

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet	16⅞c. to 18⅜c.
High brass wire	17⅜c. to 18⅜c.
Brass rods	14⅝c. to 15⅝c.
Brass tube, brazed	24⅞c. to 25⅝c.
Brass tube, seamless	21 c. to 22 c.
Copper tube, seamless	22¼c. to 23¼c.

Copper Sheets

Sheet copper, hot rolled, 20⅛c. to 20⅝c. per lb. base.

Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.

Tin Plates

Bright Tin		Coke—14 x 20	
Grade "AAA" Charcoal 14x20	Grade "A" Charcoal 14x20		Prime / Seconds
		80 lb.	$6.15 / $5.90
		90 lb.	6.30 / 6.05
		100 lb.	6.45 / 6.20
IC.	$11.25 / $8.85	IC.	6.65 / 6.40
IX.	12.85 / 10.85	IX.	7.85 / 7.60
IXX.	14.40 / 12.55	IXX.	9.00 / 8.75
IXXX.	15.75 / 13.85	IXXX.	10.35 / 10.10
IXXXX.	17.00 / 15.05	IXXXX.	11.35 / 11.10

Terne Plates

8 lb. coating, 14 x 20

100 lb.	$7.00 to $8.00
IC	7.25 to 8.25
IX	8.25 to 8.75
Fire door stock	9.00 to 10.00

Tin

Straits, pig	52c.
Bar	56c. to 60c.

Copper

Lake ingot	16 c.
Electrolytic	15½c.
Casting	14½c.

Spelter and Sheet Zinc

Western Spelter	7½c.
Sheet zinc, No. 9 base, casks	10.85c. open 11.60c.

Lead and Solder*

American pig lead	9c. to 9½c.
Bar lead	11c. to 12c.
Solder, ½ and ½ guaranteed	38c.
No. 1 solder	35c.
Refined solder	29c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.	75c. to 90c.
Commercial grade, per lb.	35c. to 50c.
Grade D, per lb.	25c. to 35c.

Antimony

Asiatic	13c. to 14c.

Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb.	36c.

Old Metals

The market is practically unchanged and business is slow. Dealers' buying prices are as follows:

	Cents Per Lb.
Copper, heavy crucible	11.00
Copper, heavy wire	10.50
Copper, light bottoms	9.00
Brass, heavy	6.50
Brass, light	5.00
Heavy machine composition	8.00
No. 1 yellow brass turnings	7.00
No. 1 red brass or composition turnings	7.50
Lead, heavy	6.75
Lead, tea	5.00
Zinc	3.75
Cast aluminum	16.00
Sheet aluminum	16.00